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... THE IRON AGE ...

SEPTEMBER 15, 1938

ESTABLISHED 1855

Vol. 142, No. 11

Hallelujah, Come Again!

LEWIS W. DOUGLAS was Director of the Budget during the period from March, 1933, to August, 1934. That was long enough to convince him that the federal budget needed a Corrector more than a Director and, being the sort of man whom Mr. Roosevelt would label a "conservative," he joined the exodus of eminent Democrats and forsook public office for private life.

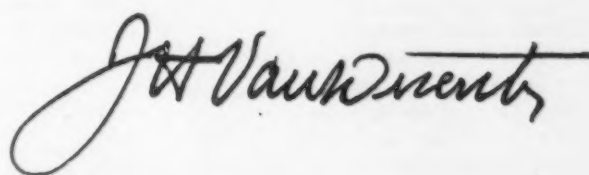
Back in 1933, while still Director of the Budget, Mr. Douglas saw very clearly what few people saw then but many are beginning to see now. I remember being one of a visiting group of editors to whom he spoke of the probable damaging after-effects of the building of a huge federal relief mechanism. In effect he said: "It is difficult and takes many months to disband a great military organization after a war. It is infinitely more difficult, if not impossible, to disband a federal relief army after a depression."

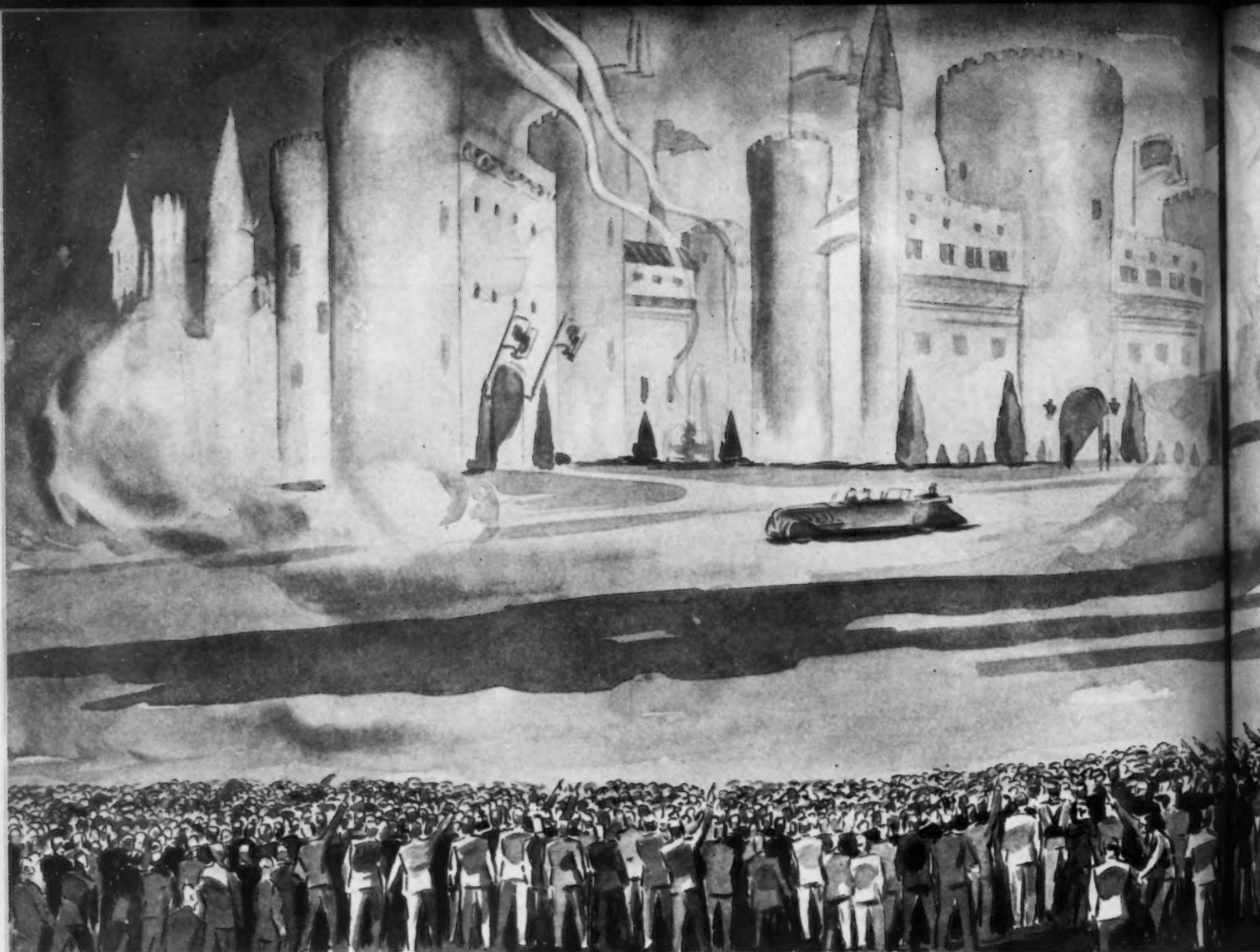
I was reminded of his prediction by what I saw and heard during the past few weeks during a motor trip through 20 states, most of them in the Middle and far West. Ten years previous, on a similar trip, I had seen many migratory workers and quite a few plain "hoboes" walking the railroad tracks or asking for "hitches." This time I saw but one. Most of them, I was told, had found "social security" on Uncle Sam's relief rolls.

What a young Kansas farmer told me also brought back Mr. Douglas' prediction quite forcibly. This chap had lost most of his farm holdings during the depression but had hung on to some land. To recoup, he was farming it daytimes and working in a garage at night. Now I must admit that a man who violates the modern New Deal social ethics by working hard at two jobs—other than political ones—is beyond the pale and should receive no consideration or credence. Yet I have every reason to believe he was stating the truth when he said that 70 per cent of the voters in his community were on federal or state relief rolls. "These fellows control our community," he said. "They vote assessments for new projects such as water or sewer systems or parks, and we poor suckers who are not on relief have to work double time to foot the tax bill."

Shortly after getting back into New York State, I met a confirmed individualist. He was whiskered and ragged, evidently an incorrigible hobo who preferred his liberty to a berth in the WPA. He was singing this song:

"Hallelujah, I'm a bum
Hallelujah, come again,
Hallelujah, here's a handout—
Hallelujah, amen."





SALESMEN WANTED—To Sell

LET'S look over the charges that are being hurled at the American System of Enterprise and see if they can be answered.

These charges are as follows:

1—The employees get practically nothing—the employers and stockholders get practically all of the national income produced.

o o o

2—The rich are getting richer and the poor are getting poorer.

o o o

3—While wages do not increase

over the price of living, the rich increase their wealth and standard of living by leaps and bounds.

o o o

4—That the rich, due to their increasing wealth and the increasing poverty of the masses are daily strengthening their position to where the common people will soon have nothing at all.

o o o

5—All frontiers are now developed and there's nothing left to do but restrict all activity to the preservation of what we have, since the opportunity for new development is past.

Millions upon millions of people throughout the United States believe that either one or all of these charges are true. The fact that there is not the slightest foundation of fact back of any of these charges is beside the point. The salesmanship of that great element in America that believe in free enterprise rather than political control has receded to such a low ebb that the most glaring fallacies are accepted as true by millions of people. This is due only to the fact that there has been little or no effort made to



Facts to American Workers

contradict these fallacies and establish the truth. The so-called sound thinking people of this country have completely forgotten the first principle of free government, i. e., "eternal vigilance is the price of liberty."

Plenty of Offensive, Little Defense

Just to declare and repeat that the radical is all wrong will get us nowhere. To call him a Communist will not weaken his effectiveness in the least. If what he says is true—he ought to be a Communist. And if what

By L. A. YOUNG

Chairman, L. A. Young, Spring & Wire Corp.

o o o

he says is true all those who hear him should become Communists. However, it is not the man who calls himself a Communist who is doing all the damage. It is the millions of citizens who believe that the system of private enterprise and free individual rights

has failed who are really placing individual initiative and private enterprise in jeopardy. The reason for this is simple. There are actually thousands of good speakers giving their time and their energy, most of them thoroughly sincere, to the job of tearing down the system of private enterprise and all that goes with it. You can count on the fingers of your two hands all of those without an axe to grind who are taking the public platform to defend the system of private enterprise and to explain the funda-

mental economics justifying the retention of this system.

Charge number one made by the radicals was quite thoroughly answered in my previous article in *THE IRON AGE*.^{*} The United States Government in its famous survey "National Income from 1929-1935," issued by the Department of Commerce, thoroughly contradicts every phase of charge number one. This survey shows that of all the income produced and paid out by the manufacturers of the United States, 84 cents of each dollar on the average was paid to employees. There comes of course the professorial inquiry that we expected. It reads, "Nearly ten million workers in industry, from the president down, receive the 84 per cent." Isn't it also true that just a handful of men receive the other 16 per cent? No, it is not true. The number of people receiving the 16 per cent about equals the number that get the 84 per cent. Entrepreneurs, that is small unincorporated manufacturers who receive little more than the wage earners in industry, receive 2 per cent of this 16 per cent. Stockholders in manufacturing enterprises number only a few less than workers in manufacturing enterprises. While the 84 per cent goes out to nearly 10 million wage earners and salaried people, 12 per cent of dividends that accrue to each dollar of income produced by the manufacturers goes out to nearly 10 million stockholders and bondholders. In other words, there are nearly as many people participating in the dividends paid out by the manufacturer as do the employees in this industry. The interest paid runs from one to two cents on each dollar of income produced and this interest again is paid to thousands of stockholders in banks and various financial institutions. Our own government proves that the distribution of our national income is basically fair and on a much more sound basis than any other country on the face of the globe.

Standard of Living

Now to charge number two. In the first place, the masses are raising their standard of living and their income more rapidly than the rich are raising theirs. Let's go back to the facts; they're interesting.

In 1916, the richest 1 per cent of our population received 17 per cent of the total income produced. In 1926, the year most used as the balance

^{*}See "Kicking the Soap Box from Under the Demagogue," *THE IRON AGE*, April 7, 1938.

wheel year of the twenties, the richest 1 per cent received 16 per cent of the total income. In 1933, the 1 per cent of our richest people received a little over 11 per cent of the total income produced in this country.

Therefore, the so-called richest 1 per cent received more than 5 per cent less of the national income in 1933 than they did in 1916. In other words, whenever the income of the 1 per cent increases, the income of the 99 per cent increases to a still greater proportion. That's what the framers of the Constitution thought would happen—and it's what the records of history prove has happened.

Now to number three: In 1870 the average factory wage in this country was \$302 a year. And the cost of the necessary commodities of life was 17 per cent higher to the workers of 1870 than they were to the workers of 1935. By steady degrees to 1935 we had reached the point where the average factory earnings were \$1,080 with the cost of commodities 17 per cent less than they were when the workers were receiving \$302 in 1870. In 1929 the average factory wage was \$1,315 a year but the cost of living was 21 per cent higher than it was in 1935, making the actual and real wage \$1,085 a year. Whereas, figuring the actual wage in 1870 compared to the 1935 cost of living, the average real purchasing power of wages in 1870 were only \$258 a year in comparison to the \$1,080 of real buying power wages received by the workers in 1935. In other words, the real purchasing power of wages of the American factory worker in 1935 was nearly four times greater than in 1870. That is not all of the picture. The factory worker in 1870 worked twelve hours a day against the average of eight hours a day in 1935.

These facts completely explode the utter fallacies that we hear from soap boxes and public platforms in every part of the United States every day.

Rich Are Getting Poorer

Now to charge number four: The old time-worn fallacy expounded by Eugene V. Debs and now issuing from thousands of demagogues in every nook and cranny of the country that the rich will soon have it all and that the masses will daily receive less and less. In 1900 the employees of this country received 50 per cent of the total income of this country. In 1935, they received 67 per cent. The employees of the manufacturing industry received a much greater increase

in the national income since the employees in the American manufacturing industry now receive 84 per cent of the total manufacturing income produced. In 1900, seven million homes were occupied by owners. In 1934, more than 14 million homes were occupied by owners. In 1910 there were 16 million savings depositors. In 1935 there were 41 million. In 1900 there were four million people of the United States who owned securities in its industrial and financial enterprises. In 1935, nearly 25 million people owned securities in these same enterprises. In other words, there were six times as many of the so-called common people who owned stock and shares in industrial and financial enterprise in 1935 than was true in 1900. Surely this completely explodes the fallacy that the poor are getting poorer and demonstrates that under our system the living standards and the security holding of the masses is increasing much more rapidly than any other time in the history of the world. And much more rapidly than under any other political system. The ability to procure life insurance is one of the greatest securities that the masses can enjoy. In 1900, less than eight million people in our entire country carried life insurance. To be exact, there were 7,725,000 policyholders in that year. In 1935, there were 63 million policyholders whose families enjoyed the protection that their forefathers were not able to enjoy.

New Frontiers

Now for number five: All frontiers are now developed. An official of the United States Patent Office committed suicide a half a century ago because of melancholia brought on by the belief that there was nothing new to invent, no new frontiers to explore. In 1885, one of our highest government officials reported to the United States Government that the United States had reached its peak of development; that it would now be necessary to restrict production and activity, farm out the work in equal shares and realize that we had reached the stage of saturation in consumption and that the building of the Northern Pacific Railroad ended the pioneering of our so-called frontiers. The archives of official history in Washington are filled with statements of this kind and the editorial pages of our press have carried like arguments ever since the close of the Civil War. Since the high government official pointed out that the saturation point had been reached

and there was nothing new to develop, the telephone, the electric street car, the automobile, the airplane, the motion picture, the radio, electric refrigeration and a thousand other new developments have taken place that have given employment and comfort such as the world had never even dreamed of at the time the Washington official solemnly reported that the top had been reached. We are no nearer the top now than we were then in 1885. The developments in the next

tear down. The people of the United States will react to what they think is true. If there was one man selling the truth today with the same diligence, the same fervor with which a hundred are selling extreme radicalism, America would have its feet on the ground in less time than it takes to write this story. It is going to take the greatest crusade of salesmanship in this country to bring back contentment, cooperation, stability and progress to our people. Every conscientious American

to argue about it. It is not necessary to form any new groups to spread the gospel of truth and to produce a spirit of cooperation among the people of this country. Mr. Roosevelt desires a future national income of 100 billion dollars. From 1900 to 1939, our national income was increased from 19 billion dollars to 81 billions. There is no reason to stop at 100 billion dollar income. Give our people the truth and when that happens we will automatically have government that treats all people alike, showing favor to no class or group and not discriminating against any class or group. The truth spread throughout the country will automatically establish a government where every group will receive the protection of government without regard to whether they belong to an agricultural group, a labor group or a business group.

A WISE philosopher once remarked that the trouble with the American people is that they know so many things that aren't so. That remark certainly applies today.

Americans have discovered, recently, that there is such a thing as "economics" and as a result we are hearing broadsides of half truths, quarter truths and untruths from thousands of soap boxes, pulpits and political platforms. It is no wonder that American workers are bewildered and in a fog.

What we need are people to tell our workers the simple truth and to prove it with facts. The author does that in this article. It is an appropriate sequel to his previous article, "Kicking the Soap Box from Under the Demagogue" which appeared in *The Iron Age* of April 7, 1938, and which attracted wide attention.

One Hundred Billions a Year

When the truth is fully divulged to where all our people understand the rules of the great game we're playing, our savings whether from a working man or a business man will be protected and aided by both government and the people who make up that government. And when this is done we'll reach a 100 billion dollar annual income with every person who wants to work having a place to work. These are blessings that this country can and should enjoy. It can and will enjoy them the moment we take the phrase "eternal vigilance is the price of liberty" seriously and all realize that until we have enough feeling of responsibility toward our families and our neighbors to take the time and the trouble to establish our system of government on a foundation of truth by making it possible for every individual to become acquainted with basic economics we will remain in a fog. It is not necessary to wait for George. Any individual can start this crusade of truth in his own community tomorrow. This activity should not spring from Wall Street, it should not spring from Washington. It should not emanate from the labor temples. It should be a spontaneous activity entered into by all of our people, from street sweepers to bank presidents. This country does not belong to politicians in Washington or wizards in Wall Street or any other exclusive centralized group.

Ours is a country where more than three thousand county governments are responsible for local political welfare. A country where every man is a king in his own home.

40 years will far outstrip anything that has happened in the last 40 years. This is not a prophecy. Complete government control is the only force that can stop progress. Scientific engineering today is an advanced art. It will develop new comfort, new inventions much more rapidly than in the past, due to the fact that we are much more capable now of creating new things. Necessity is the mother of invention and so long as the individual is clothed with the responsibility of charting his own life, of hoeing his own row, inventive genius, ambition will supply the motive power to bring more comfort and more freedom to our people, not less comfort and less freedom. It is freedom of the individual that inspires the imagination and gives power to his ambition. Take that away and you have removed the spark plug that has been responsible for a vast majority of all the improvements and comforts that have accrued to the human race since the Constitution of the United States was written.

We Need Salesmen of Truth

But it is all idle talk and time wasted to condemn those who would

must engage in this activity. We are the most organized country in the world. And yet we do less in an organized manner to really sell America than is true of any other civilized nation today.

They're doing a great job of selling Great Britain to the British, Germany to the Germans, Italy to the Italians, Russia to the Russians, Japan to the Japanese, and France to the French. There is practically no movement making any headway in attempting to sell America to the Americans.

Facts that can be placed on a dozen sheets of paper, that can be easily understood, free of propaganda, free of bias but filled with tolerance and human appeal, must be established and placed before the leaders of our organized groups and that includes the American Legion, the labor organizations, the churches, our educational institutions, our service clubs, our women's clubs, our patriotic organizations, our fraternal groups, our trade associations and professional clubs. Inside of these organizations is sufficient latent power to bring the truth before every man, woman and child in this country in less time than it takes

Holding and Supporting Assemblies

By H. M. WEBBER

Industrial Department, General Electric Co., Schenectady, N. Y.

• • •

WHEN putting assemblies through the furnace to be brazed, the relationship of the parts must be maintained, of course, from start to finish. There are a number of ways this can be done. In cases where an assembly is complicated, it might be necessary to resort to a combination of several different methods.

The method of holding the assemblies together, the design of the joints, and the means of applying the brazing metal are all very closely related. Since the success of a furnace-brazing job depends largely upon these fundamentals, a few practical hints or reminders related to this phase of the subject will be given here. Some illustrations will show where the furnace-brazing process has replaced or augmented other methods of fabrication. It also will be seen that some of these former methods are used to

hold together certain assemblies designed for furnace brazing.

Undoubtedly, many of the following illustrations will be considered quite elementary, and perhaps rather simple for a series such as this. It is this very simplicity, however, which lends a certain fascination to the furnace-brazing process, and also which makes it so easy to use in production.

Force of Gravity to Be Considered

One of the most important things to remember in furnace brazing is the force of gravity. Assemblies have a tendency to fall apart after they become heated and when the joints become loosened due to expansion. Also, the brazing-metal naturally tends to flow downward more than in any other direction. It will creep horizontally or upwards on the surfaces of the metal, but it will flow downward quite freely and will collect at low spots if applied in excess quantity. Therefore, in designing an assembly for electric-furnace brazing, one must keep in mind how the assembly will be held together within the furnace, and how it will be set up in the furnace both to direct the flow

of the brazing metal into the joints to the best advantage, and to give minimum distortion or movement of the parts. These points generally are easy to determine by cut and try methods, and when a proper procedure is found the brazing metal can be made to flow into all joints leaving neat fillets and clean surrounding surfaces, and the job can usually be done without distortion.

It will be observed that many references will be made to the use of copper as the brazing metal, and steel as the parent metal. This is because the combination of copper and steel is the most common one, although other brazing metals and parent metals also, are sometimes used.

Now to proceed with the various methods of holding assemblies together within the furnace:

Laying Parts Together

Perhaps the simplest method of joining two parts is to simply lay one on top of the other with brazing metal either in between the members or wrapped around one of the members near the joint. In this case the weight of the upper member would be depended upon to assure good metal-to-metal contact, or a weight could be added to assure it. The scheme sometimes lacks the advantage of having a definite means of indexing or keeping the parts from moving in relationship to one another. However, a few products are being brazed by this method.

For example, the armature core of the magnetic contactor shown in Fig. 15 is assembled from three pieces laid one on top of the other. The bottom member is a steel washer or header. The intermediate member is a 0.010 in. shim of 18-8 stainless steel, copper plated on both sides. The upper part is a steel core with a tenon which fits snugly into a hole in the shim but which projects loosely into the hole in the header. The shim is rectangular while the header and core

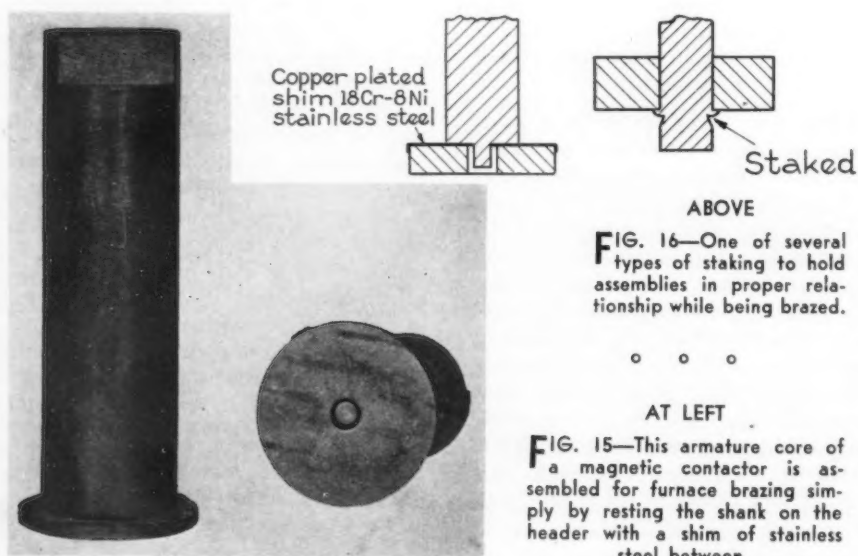


FIG. 16—One of several types of staking to hold assemblies in proper relationship while being brazed.

FIG. 15—This armature core of a magnetic contactor is assembled for furnace brazing simply by resting the shank on the header with a shim of stainless steel between.

in Electric-Furnace Brazing—I

are cylindrical. The corners of the shim are bent down over the header in order to centralize the hole in the shim over the hole in the header and thus to serve as an effective guide in keeping the tenon centralized in the hole. This provides a uniform air gap around the tenon. The stainless steel, being non-magnetic, also serves as an air gap between the header and the core.

The copper plating on the shim is about 0.0015 in. thick. The plated shim is dipped in a warm solution of flux before assembly in order to assist the wetting of the copper on the stainless steel. In general, stainless steel is quite difficult to copper braise; but in this particular instance, the copper plating, the flux, and the fact that the surfaces to be furnace brazed are embedded within the joints and protected from contamination by slight impurities in the furnace atmosphere, all serve to give a good bond. The nickel in this 18-8 stainless steel also favors the wetting action because of its affinity for copper. The bond has great strength, and the assembly can be given considerable abuse with little resulting damage to the bond.

Pressing Parts Together

The most common method of assembling parts for electric-furnace

AS the method of holding component parts of an assembly together within the furnace is basic to the success of a given furnace-brazing job, this article and its continuation in a forthcoming issue is an important chapter in the series by Mr. Webber. The initial article, in *THE IRON AGE* of Sept. 8, described a number of typical applications of the process.

brazing is to simply press them together, using a sleeve fit. In general, regardless of the degree of tightness of the sleeve fit, some scheme is resorted to, to prevent slippage of the parts when they become heated up in the furnace, particularly if the joint has a vertical axis. Fig. 1, part A, [see *IRON AGE* of Sept. 8], showed a shoulder machined on one member to accomplish this stability.

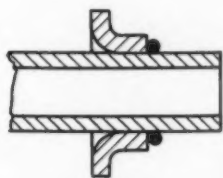
Fig. 16 illustrates in exaggerated manner how staking will lock two members together effectively. As shown here, burrs are turned up in the shaft by driving a punch into it.

There are a number of modifications of this method of staking which are equally suitable. Staking is commonly employed to retain the indexing of such assemblies as cams, levers, and gears, on shafts or on common hubs. Tack welding and pinning are other methods which accomplish the same result.

Where the joint to be brazed has a horizontal axis and there is no tendency for one part to slide on the other, as in Fig. 17, the staking operation generally can be omitted. It is simply necessary in such cases to have a snug fit. Attention is also called to the fact that the brazing metal is placed on the side which is more likely to draw the molten brazing metal into the joint by capillary attraction, before it can flow away. If the horizontal axis of the assembly could be tipped very slightly to further encourage this effect, added advantage would be gained.

Snug Fit Desirable

In pressing parts together, the usual tolerances from machining the parts naturally give variations in the amount of press fit, which cannot be avoided. An effort should be made, however, to have a snug fit at all times if possible, when brazing steel with copper, to assure both maximum strength and tightness in the joint

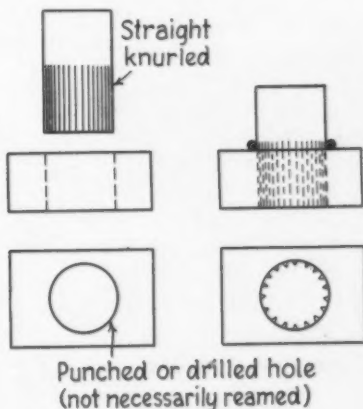


ABOVE

FIG. 17—Simply pressing parts together is sometimes ample.

AT RIGHT

FIG. 18—Straight knurling the male member and pressing it into the hole gives a snug fit.



Dimension to be held



FIG. 19—Spot welding of parts together prevents slippage and thus holds dimensions accurately.

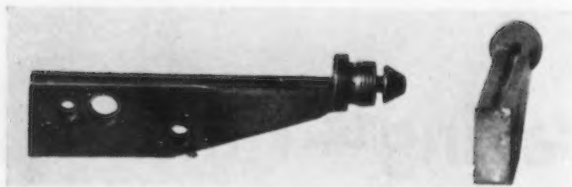


FIG. 20—Tack welding holds the tip to the shank of this electrode holder while being furnace brazed.

and to prevent movement of the parts during handling around the shop.

There is no limit to tightness of joints for copper-brazing steel assemblies, but increased tightness generally requires increased time in the heat to permit the copper to flow clear through, and nothing is gained

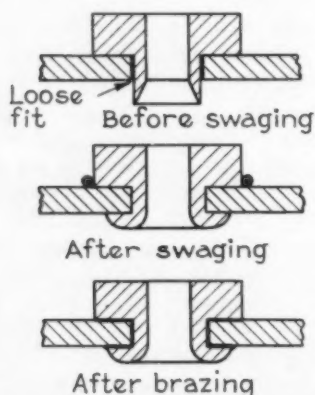
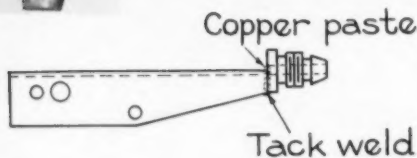


FIG. 21—Swaging spuds into shells is an effective and inexpensive means of holding the spuds in place.

thereby. Sometimes a heavy press fit results in distortion of the parts due to stretching them beyond their elastic limit when hot; resulting effects are opened-up or weak joints. A good rule to follow is to use a maximum permissible press fit of about 0.001 in. per inch of diameter. A uniform sleeve fit should be provided, with intimate metal-to-metal contact throughout, rather than to have only a line contact within the joint. When brazing with lower-melting alloys, particularly on non-ferrous assemblies, it is usually desirable to have a clearance of 0.001-0.003 in. within the joint to permit the best flow of the brazing metal.

A scheme sometimes resorted to, to obtain an inexpensive snug fit, is to straight-knurl the male member, having the outside diameter considerably oversize as compared with the hole. Then when the parts are pressed together they will assume an appearance somewhat as that shown in Fig. 18. With this arrangement, wide tolerances can be used on both the shank and the hole, which contributes toward getting a low-cost job. The



scheme is a compromise with perfection, but it is practical.

Spot Welding Parts Together

Spot welding is frequently employed for holding definite relationship between the parts assembled for electric-furnace brazing. It is fast and inexpensive, and the job is generally a neat one.

A typical example of such spot welding is shown in Fig. 19. The as-



FIG. 22—The valve body of this refrigerator float chamber is swaged in place before copper brazing.

sembly is an unloader for a refrigerator, it being desired to hold accurately the dimension indicated. While traveling through the furnace it rests in the vertical position as shown in order to get the best flow of copper down through the joint. However, in this position the cup might slip in the tube, when the parts expand in the heat, if the assembly were not spot welded together. In addition to having uniform dimensions, these assemblies are tight, strong and clean. The fact that the furnace brazing of these assemblies is economical is partly illustrated by the fact that a single furnace operator can braze about 2000 per hr.

Tack-Welding Parts Together

Tack-welding is frequently used for fastening parts together. For ex-

ample, the electrode holder for an atomic-hydrogen welding torch, Fig. 20, has its tip tack-welded to the shank so that the two parts butt against one another, giving good intimate surface contact. A small amount of copper-powder paste is daubed around the joint to supply the brazing metal. The copper flows uniformly through the joint and makes a strong, tight bond. Any oxide formed in the tack-welding becomes cleaned up by the reducing atmosphere in the brazing furnace, and the assemblies emerge from the furnace clean and white except for the color of copper near the joints.

In tack-welding care should be taken to assure snug contact within the joint. To accomplish this it is usually desirable to hold the assemblies in fixtures.

When using tack-welding methods in production, a study is generally made to find the most strategic points to weld and also to reduce to a minimum the number of tack welds. The former has to do with the quality of the job while the latter is a step in the direction of cost reduction. Some products require that the tack welds be ground or machined off after furnace brazing.

Swaging Parts Together

An inexpensive and effective method of assembling spuds into holes in hollow bodies is to swage them in place as shown in Fig. 21. This scheme can be used when it is not necessary to retain accurately the diameter of the hole in the spud. The

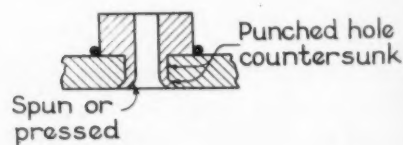


FIG. 23—Spinning or pressing the end of a tenon into a countersunk hole effectively locks the parts together and has little or no effect upon the size of the hole in the hub.

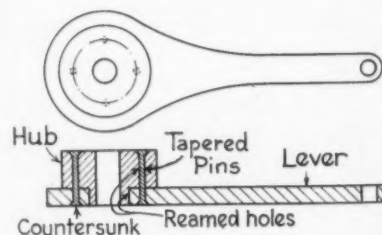


FIG. 24—Levers with hubs, formerly pinned, are now furnace brazed with advantages in reduced cost and stronger assemblies.

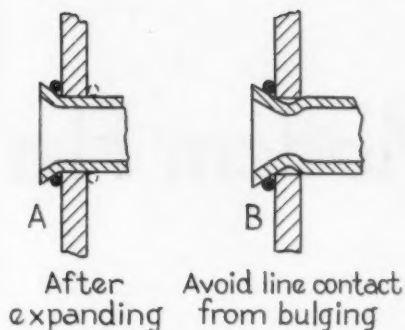


FIG. 25—Expanding tubes into tube sheets can sometimes be employed to advantage.

advantage of the method is that close tolerances do not have to be held on the tenon or the hole because the swaging operation forces the parts into intimate contact. For instance, the upper view shows in exaggeration a slight gap, which might be as much as 0.003 in. After swaging, however,

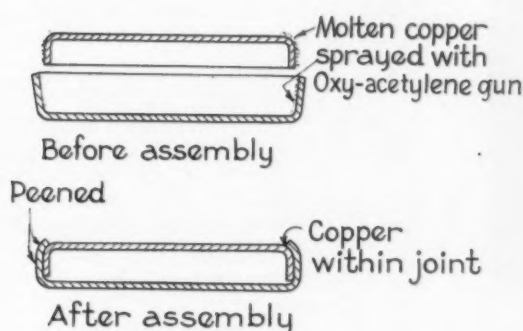
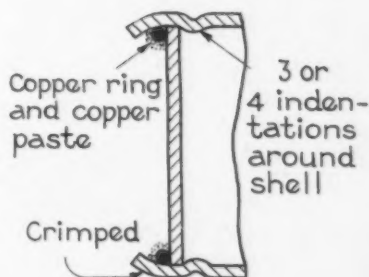


FIG. 26—Snug joints in an assembly of stampings such as here shown are sometimes obtainable only by carefully peening the edges.

FIG. 27—Crimping the ends of a shell, such as in a refrigerator receiver, is commonly employed to hold the end-plate and the copper-wire ring in position.



the hole is completely filled up and the projection is laid back tightly against the shell. This method has been used for a number of years in assembling the valve body into the float chamber for refrigerators shown in Fig. 22. A strong, tight, dependable bond that withstands high pressures and is absolutely leak-proof is obtained.

Spinning Parts Together

Where the diameter of a hole in an assembly must be held accurately, as in the case of the hub fastened to a lever, shown in Fig. 23, spinning in a riveting machine is commonly resorted to. Another method for obtaining the same result is to flare the tenon in a press. For such work, tolerances for the punched hole and tenon are held closely so that the parts will fit together uniformly snug. The hole is chamfered so that the end of the tenon can be spun or pressed into the chamber as illustrated. This method is commonly employed in the assembly of furnace-brazed parts for

cash registers, adding machines, calculating machines, etc., many of which parts were formerly drilled and pinned.

The cost savings resulting from electric-furnace brazing spun assemblies are obvious when comparing this construction with pinned assemblies as shown in Fig. 24. In the pinned assemblies, holes are first drilled and then reamed on a taper. The parts are then fastened together with tapered dowel pins which must be cut off and ground smooth. The work requires carefully made fixtures and involves maintenance and replacement of small drills and reamers, all of which are avoided when the assemblies are simply spun in preparation for furnace brazing.

Expanding

When tubular members are pressed into headers, it is sometimes possible to expand them into the holes in or

the tube as shown at B in Fig. 25. This can be avoided by having a leader on the expanding tool to project into the tube and support the tube wall while the end of the tube is being flared out.

Peening Parts Together

Sometimes it is desirable or necessary to peen one or more of the members of an assembly in order to assure intimate contact and to hold the members together in the furnace. Fig. 26 illustrates this. The shell consists of two stampings pressed together and then peened around the edges with an air hammer. As one means of applying brazing metal to a joint of this sort, copper in the molten state can be sprayed on the parts by means of an oxy-acetylene spray gun, so that after assembly it will be within the joint.

Crimping Parts Together

Fig. 27 shows a disk in the end of a shell being held in place by crimping the ends of the shell. This sketch also illustrates an inexpensive and effective means of forming stoppers against which the disk is held—consisting of three or four indentations around the shell.

It would be best to set an assembly such as this on its end in the furnace so that the brazing metal will flow down through the joints. But such assemblies are sometimes quite long and standing them on end is impracticable from the standpoint of getting them through the furnace. If the assembly must be laid down on its side, it is desirable to use an oversized ring of brazing metal with its outside diameter greater than the in-

(CONCLUDED ON PAGE 62)

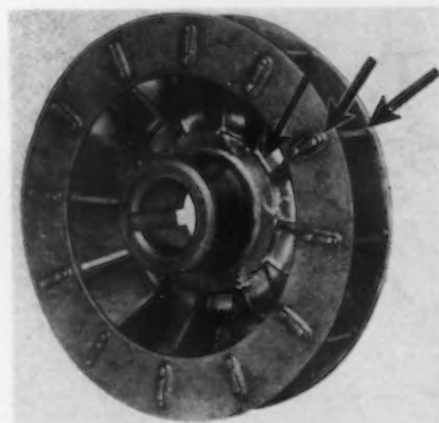


FIG. 28—Formerly entirely riveted, this fan-wheel assembly is now both riveted and furnace brazed, with complete elimination of service failures.

der to lock the assemblies together, as indicated at A in Fig. 25. Copper rings can be put into place over the tubes after the expanding operation, against the outside of the tube sheet. Or, if preferred, they can be put over the tubes before assembly, and after the expanding operation they can be moved up against the inner-surface of the tube sheet, assuming that the rings are accessible.

In the expanding operation, care must be taken to avoid producing only a line contact from bulging of



FIG. 1—A Goodrich 3 in. heavy double endless belt, soaked with cutting solution, gives over four years of trouble-proof service.

CHAPTER 35 of a Series on the Economics of Industrial Power Transmission.

• • •

THERE are two essential points of difference between leather and rubber belting. It is because of these points of difference that the technique of drive design and belting application in each case requires dissimilar treatment. It is the purpose of this discussion to make these differences clear, and to show how they entail fundamental variations in application practice.

The first difference to be considered is the fact that the material in each case originates in two separate and distinct divisions of the physical world. Leather belting is a product of the animal kingdom; rubber belting of the vegetable kingdom. Now, of itself

alone this distinction has little meaning until one considers how the final results in each case are obtained. Both products come from living, growing organisms, but in the one case (leather) man accepts the product of that life and growth and by treatment *adapts* it to his needs, while in the other case (cotton and rubber) he completely *transforms* the basic materials into forms not even remotely suggested by nature.

As a result of these different methods of treatment of the raw materials, as well as the differences inherent in the materials themselves, a fundamental dissimilarity in manufacturing methods arises which has a profound influence on the application and use of the finished product in each case. It is well worth while to understand this fact, and to appreciate its bearing on the use of belting.

In flat rubber belting, the cotton

Modern Flat

fibers may be twisted into hard or soft yarns or relatively thick cords, the yarns may be woven into light or heavy ducks with various degrees of springiness in the fabric, and the rubber pressed into each ply thickly or thinly; all with a high degree of uniformity throughout each inch of length of the finished belt. By contrast, the leather belting manufacturer must substitute for precision methods of manufacture a very high degree of selection of materials and processes. Starting with hides which vary in thickness, weight and strength even in different parts of the same hide, he must select the best and most uniform parts of each, treat them variously to secure the needed characteristics, match strip against strip to get balance throughout every foot of belt length, and assemble all these strips with exceedingly great care and skill.

The point at issue is that a good leather belt is essentially a product of human workmanship, developed from fairly intractable materials. The skill and care with which it is made results either in a superior product of high value, or in a product which is not a credit to the industry. There is no middle ground. Flat rubber belting is essentially a machine-made article developed from easily worked materials. The greater part of the skill required in its manufacture lies in the careful selection of the raw materials and the close control of the processes needed to secure a predetermined set of results. A modern flat rubber belt is essentially uniform in its characteristics, and the range of quality from best to poor, may be closely predetermined and held uniform, in accordance with the service characteristics desired.

The flat rubber belting of today is as much different, compared to the flat rubber belting of 20 years ago, as the modern low pressure automobile tire compared to its hard-riding, short-lived fabric ancestor. Reputable rub-

Rubber Belting Drives

By FRANCIS JURASCHEK
Consulting Editor, *The Iron Age*

ber manufacturers claim that, properly applied and adequately maintained, the newer types of flat rubber belting should give about the same differential in increased belt satisfaction, unbroken production and economical life-service, as can be expected from the newer types of tires in comparison with the old.

Note, however, that the key of the problem is contained in the phrase "properly applied and adequately maintained." The technique of rubber belt use is radically different from the technique of leather belt use. The two materials are *not* exactly interchangeable. The plant production man who arbitrarily replaces a leather belt with a rubber belt, or a rubber belt with a leather belt, without taking into consideration the characteristics of the various materials, cannot expect in either case to get completely satisfactory service.

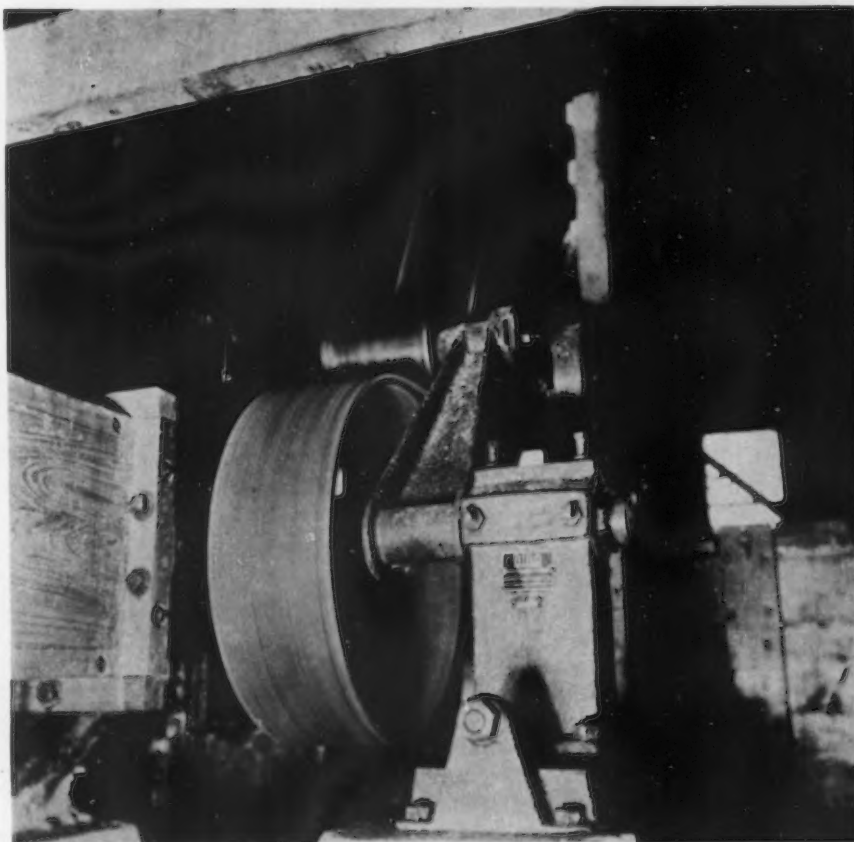
Belting, whether leather or rubber, is not an article which can be picked off the distributor's shelf willy-nilly by the novice and immediately put to use on *any* type of service, any more than the average man ordering a pair of shoes from a mail-order catalog can expect to secure a really comfortable fit. To secure the most economical service from any belt it is essential to know the performance which may reasonably be expected from any type of belt. Other things being equal, it may reasonably be assumed that the larger the range of service characteristics which may be offered in any certain type of belting, the more satisfactorily can the characteristics of the drive service and the machine load be met. But this should not be a matter of guess-work. The only safe experience is that founded upon adequate performance records of similar belting used under conditions of service similar to that contemplated for a new belt.

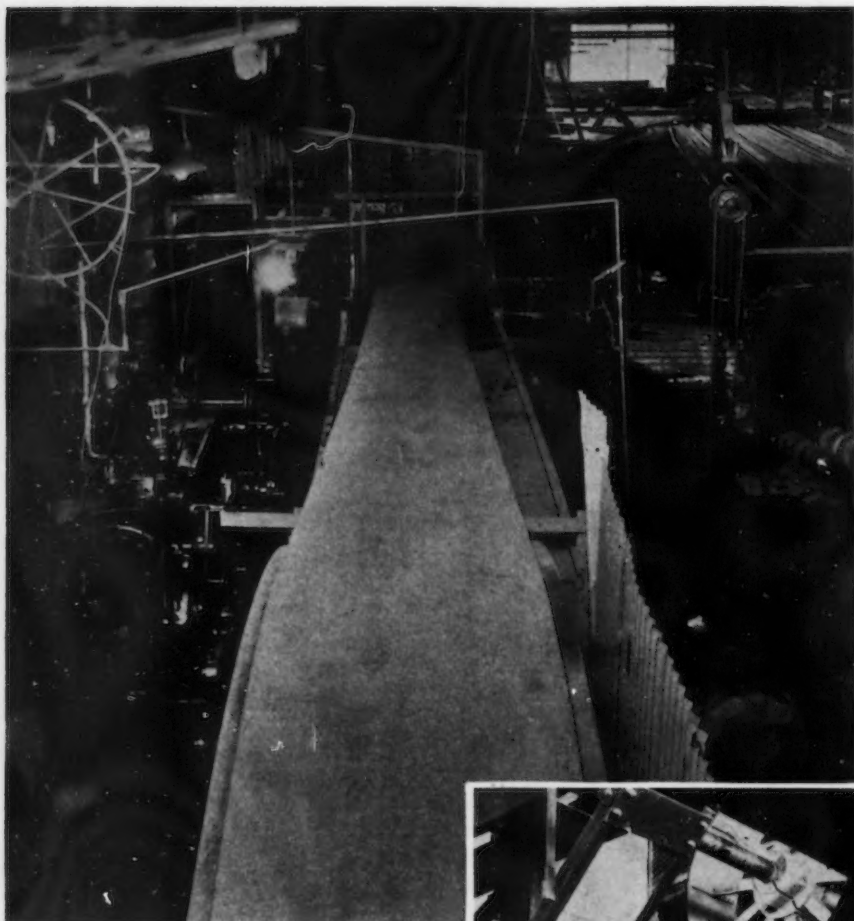
There can be no two interpretations of performance data, especially since

the most important facts to be observed in keeping belting records are (1) the number of machine shut-downs and the time lost thereby because of belt trouble of any kind whatsoever, and (2) the actual production records of the driven machines. But a misapplied or poorly maintained belt can cause more trouble than all the difference between good quality and poor quality belting of any type. Hence the need of understanding thoroughly the differences in belting which call for variations in belting application and maintenance technique.

The second point of difference between leather and flat rubber belting lies in the totally different reactions of the basic materials to the atmospheric effects of humidity. Moisture causes leather to stretch; it causes cotton to shrink. This is a factor unfortunately not too well understood in industry even today. The varying effects of more or less moisture in the air will cause all belts to tighten or loosen, as the case may be. To compensate adequately for these variations in total belt length is a function of belting application which is now deservedly receiving greater attention all around. It

FIG. 2—Installed in December, 1932, this Manhattan Rubber 8 in. 7-ply belt in a New England paper mill has not been taken-up once.





ABOVE

FIG. 3—This U. S. Rubber stitched belt was in continuous use for 10 years on a main rolling mill drive in a steel plant.

o o o

has prompted especially the development of two very modern accomplishments in rubber belting; the practically stretchless belt, and the lapped-ply vulcanized-on-the-job splice.

These two developments really go together, for one is well-nigh useless without the other. In past years it was an almost universal custom to join the two ends of a belt with rawhide or wire lacing, or by means of one of the many types of metallic fasteners available. The belt was normally fastened under tension, and when moisture conditions caused a rubber belt to shrink, so much tension was transmitted to the joint that the fastenings pulled out, destroying the ends of the belt. A majority of rubber belt failures have been caused in this manner. But with the advent of a type of rubber belting in which stretch is practically eliminated and shrinkage controlled, the lapped-ply, vulcanized splice has be-

come practicable for a majority of industrial uses of belting. The factor of shrinkage so naturally inherent in any belt with a cotton base is now controlled to a large extent by exposing the rubber belt to the atmospheric conditions of the room in which it is to be used for some time before it is actually applied to the drive, so as to "condition" it beforehand to the service it is expected to render.

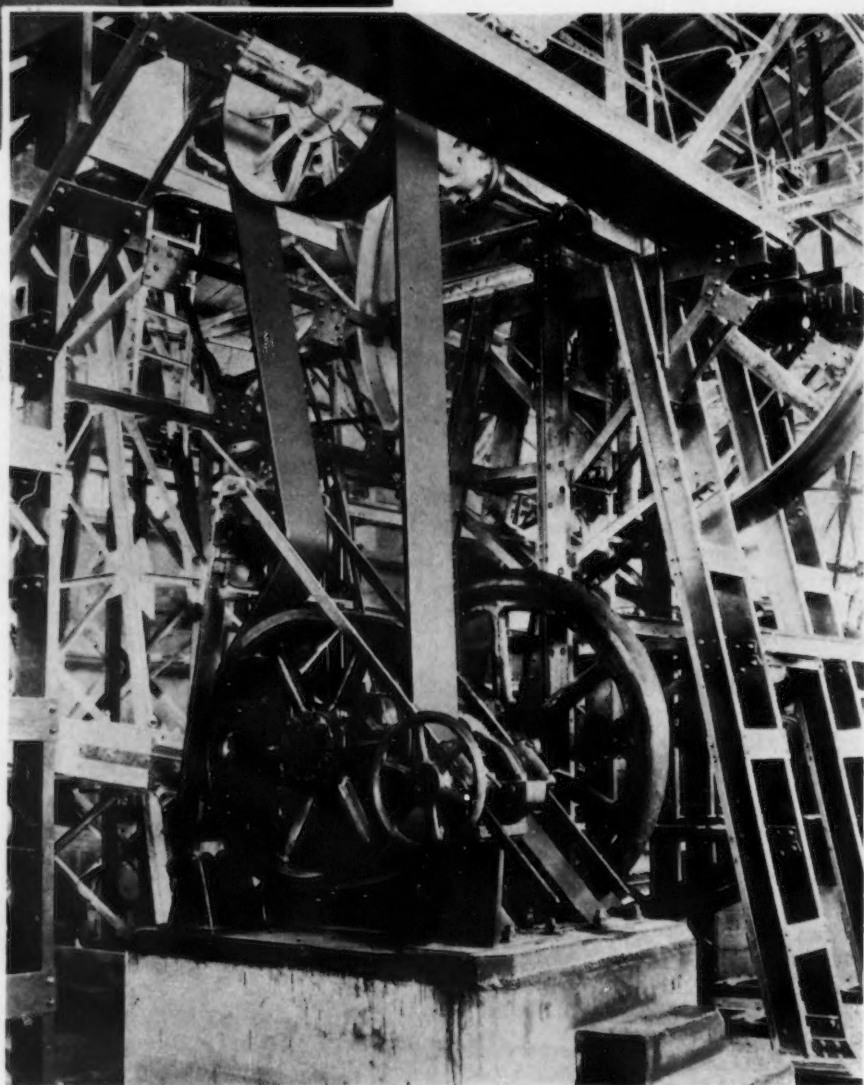
Three Types of Rubber Belting

In general, three classes of rubber belting (and many variations and modifications of these three basic classes) are made today. In the first class, the

o o o

BELOW

FIG. 4—Five years continuous service so far for this Good-year endless belt on a marble-cutting gang-saw.



warp or longitudinal threads are laid straight and pulled tight, with the cross or filler threads woven loosely. This makes a solid type of duck with little or no "crimp" in the warp threads, and consequently little springiness to the fabric. A belt made up of such fabric is adapted to handle smooth, non-pulsating loads, where little belt resiliency is required.

selection of the proper type of rubber belting today.

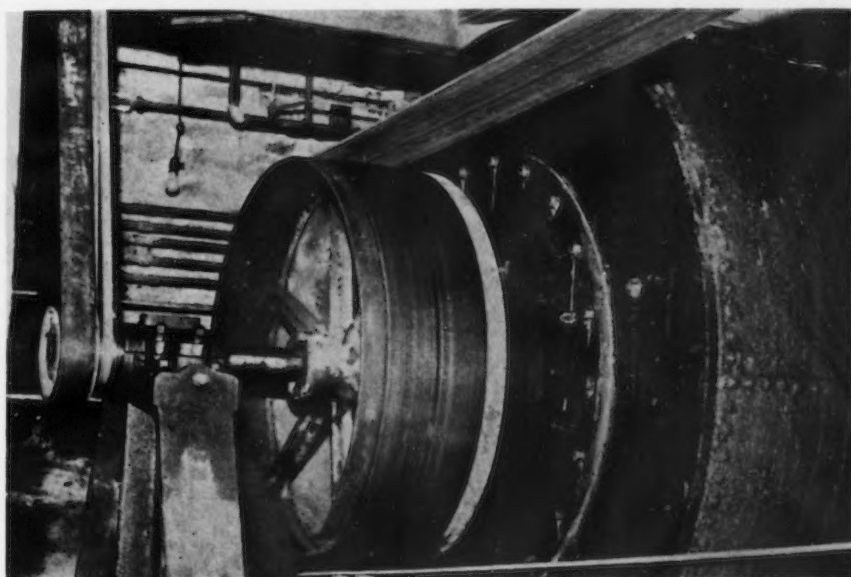
Belt Life

It is not, of course, the province of these discussions to make invidious comparisons between one type of power transmission equipment and another. Tastes differ, and the personal element will always enter into the mat-

engineering facts which determine the application of the belt to the drive must be given first consideration. 2—A choice must be made between all the various types of belting which possess the characteristics most nearly adapted to meet the engineering facts. 3—The experience of the man who makes the choice, or his willingness to accept the experiences of others working under similar conditions, must be carefully weighed. Item 1 is susceptible of hard-and-fast determination; item 2 offers today an almost unlimited number of possibilities; item 3 therefore becomes a deciding factor. It is reasonable therefore to offer, without any personal comment, certain facts of experience which bear upon the life and service of modern types of rubber belting. Since, however, belting life depends to a very large degree on proper application and adequate maintenance, it should be realized that no matter how good a belt may be in the roll, lack of intelligent consideration of these two points will ruin any belt as put on a drive.

Factors To Be Considered

Under proper application must be considered the engineering facts of the drive and the matching of the belt



In the second class the warp threads are laid quite loosely, and the cross threads are crowded close to each other. This puts a pronounced "crimp" in the warp threads, which, under operating tension, imparts a high degree of resiliency to the belting fabric. Such a belt is better adapted to handle pulsating or shock loads.

In the third class, hard-twisted "cords" of yarn are laid in thick masses of rubber and run in parallel the entire length of the belt, with only a few plies of fabric inclosing them. Such a belt has great strength, fair elasticity, little permanent stretch, and a high degree of flexibility (so desirable when passing rapidly around pulleys of small diameter). It is possible today to combine a high degree of resiliency and low permanent stretch in ducks of light-twisted yarn, and to secure this combination to an even greater degree in cord constructions. The necessity of securing these features in greater or less degree, plus the varying requirements of strength and resistance to dust, grit, atmospheric fumes and oil or grease, are the principal factors used in determining the

ABOVE
FIG. 5—One of two Manhattan Rubber belts which survived two destructive New England floods and are still operating.

AT RIGHT
FIG. 6—A U. S. Rubber belt driving a vertical crusher in a gold mill. In service 24 hours a day since the beginning of 1934.



ter of selection. Some people actually like avocado pears; others are content with bananas. According to the dietitian, the nutritive value of each is fairly similar. As between leather and rubber belting it is not, of course, so much a matter of taste as it is of value received in the form of trouble-free service, unbroken production and low cost per year for horsepower transmitted. Yet to a certain degree, likes and dislikes enter even here.

Three factors enter into the economics of the problem. 1—The purely

characteristics to the characteristics of the load and the conditions of the service. Here, the very range of types, sizes, thickness and other service qualities of rubber belting, taken with the high degree of uniformity which it is possible to secure throughout every inch of the belt length, makes it somewhat simpler to select a rubber belt to meet given service conditions than is the case with leather. With this freedom of choice, however, should go a practical knowledge of working tensions, of the advantages of



FIG. 7—Two Good-year endless belts operating a paper mill beater drive from a single 100 hp. motor. In use over two years.

the splice as compared with the fastener, and of the effects of humidity on the working tensions.

Under adequate maintenance must be considered the care of the belt to secure the best service. It has come to be generally accepted today that, aside from keeping rubber belts free from dirt and dust, the best care may be taken of them by resolving to let them alone. Doping, doctoring, and fussing with rubber belts is generally more productive of harm than good. On certain applications dressing may be necessary. Where it is absolutely necessary, get the belting manufacturer's recommendation, and stick to it. Don't experiment; let the belting manufacturer stand the brunt of such cost and nuisance and lost production time.

Rubber Belting Experiences

The following case stories are offered as typical of experience with modern types of rubber belting, under various conditions of service:

A paper manufacturer in Ogdensburg, N. Y., had found that the normal life of any belt put on with fasteners on a paper machine back-drive with the belt running at 5500 ft. per min. was from three to five weeks. A Ply-

lock-spliced Goodrich flat rubber belt was installed, and has since had an effective life of ten times that of any former belt, with no sign of failure yet.

In Fig. 1 there is illustrated an application of a Goodrich 3-in. heavy double flat rubber belt spliced endless on the pulleys, applied to the drive of a 54-in. King boring mill powered by a 15-hp. motor, in an Ohio metal working shop. In spite of the fact that the belt is soaked with a cutting solution of cottonseed oil and turpentine, it still gives satisfactory service at speeds of 1140 to 1570 ft. per min. after four years of use.

Fig. 2 shows a Manhattan Rubber 8-in. 7-ply belt, 33 ft. long, operating a Pulmax drive on a Trimbey screen in a large New England paper mill. This belt was installed on Dec. 9, 1932, and has never been removed from the pulleys nor been taken up since. It is giving perfect service.

The 96-ft. long 30-in. 8-ply U. S. Rubber stitched belt shown in Fig. 3 was in continuous use until recently on the main drive of a rolling mill in a Pennsylvania steel plant. This is a severe service drive, due to the intermittent loads in the rolling of steel, but the service given was so satisfac-

tory that it has now been replaced with an exactly similar belt.

A hard drive is that pictured in Fig. 4; a marble-cutting gang-saw at a Missouri quarry. The shock loads encountered are terrific. They broke belt after belt. Finally the Goodyear 12-in. wide endless belt shown was put on five years ago. Working every day since, it has never once been off the drive for repairs of any kind in spite of the constant moisture conditions hence no production time has been lost since this belt was installed.

Fig. 5 shows one of two 12-in. 8-ply Manhattan Rubber belts on a double horizontal water wheel drive at Lawrence, Mass. These belts withstood the ravages of two disastrous New England floods; in one they were submerged seven feet for five days, and in the other 20 feet for 12 days. After drying and dressing, both belts ran as good as when new, without additional take-up. All other belts in the plant were ruined.

Fig. 6 illustrates a U. S. Rubber 20-in. 7-ply belt, 50 ft. long, driving a Symons vertical crusher from an 84-in. pulley directly connected to a 350-hp. motor in a gold reduction mill at Colorado Springs. The actual load take-off on this drive is 96 hp., the

FIG. 8—A Goodrich oil well band-power drive in western New York. Operating 24 hours a day without a break since September, 1929.



motor being connected to other equipment also. This belt, fastened with Crescent belt fasteners, has operated practically 24 hours a day since the beginning of 1934.

In Fig. 7 are shown two Goodyear 15-in. endless rubber belts operating from one 100-hp. motor to the beater drives in a New Jersey paper mill. During the past two years similar belts on 26 identical drives in this mill have not been shut down one instant

on account of repairs or troubles of any kind.

In September, 1929, the band-power drive shown in Fig. 8, located on the property of a western New York oil producer, was equipped with a Goodrich 12-in., 6-ply flat rubber belt, 138 ft. long. The drive, set at an angle of $22\frac{1}{2}$ degrees, consists of a 20-ft. band-wheel equipped with a 14-in. idler take-up, and is powered with a 30-hp. Bessemer 4-cycle gas engine. Serving

22 wells, this drive runs 24 hours a day. During more than eight years of continuous service this power unit has not shut down once because of belt failure, and the belt is still in good condition.

From the foregoing and other authenticated case stories at hand, there seems to be no reason to doubt that modern types of flat rubber belting deliver good service over long periods of useful life.

New "Z" Nickel May Be Heat Treated

HEAT treating, which has been used so successfully in the production of high strength alloy steels, is now being applied to a nickel alloy, an alloy containing 98 per cent nickel.

Introduced as "Z" Nickel, the alloy has a strength of from two and one-half to four times that of ordinary structural carbon steel. It has been produced with a tensile strength as high as 250,000 lb. per sq. in. and hardness values as high as 46 Rock-

well C. In its unhardened or annealed condition, it is said to fabricate almost as easily as pure nickel, and such operations as bending, drawing, machining, and hot forging are accomplished readily. The metal can be heat treated after fabrication with little if any distortion, since heat treating operations are carried out at low temperatures—890 deg. Fahr. to 930 deg. Fahr. for 6 to 16 hr. The slight discoloration that develops during heat treatment may be avoided by hardening in an atmosphere of hydrogen, which need not be dried.

While commercial production of

"Z" Nickel is too recent to indicate all of its industrial possibilities, it has been used with success for hand tools, wire brushes, spring clamps, spring coils and a variety of electrical applications.

The alloy is produced commercially as hot rolled or cold rolled strip in a wide range of sizes and in various tempers. These forms are furnished unhardened or heat treated. Unhardened cold rolled strip is produced in soft, half hard, or full hard tempers with minimum tensile strengths respectively of 90,000 lb. per sq. in.,

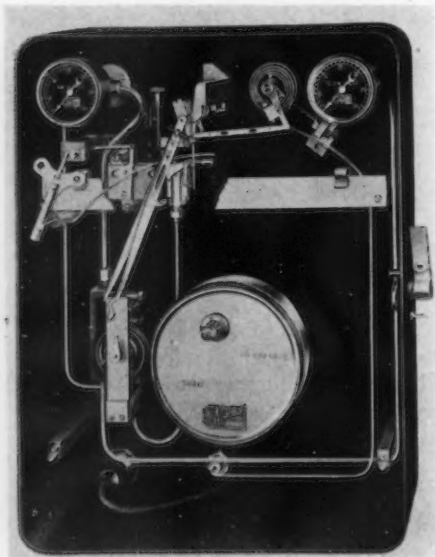
(CONCLUDED ON PAGE 49)

Recent Advances in Heat Treating

A NEW line of TAG recorders and recorder-controllers has been announced by the *C. J. Tagliabue Mfg. Co.*, Brooklyn, N. Y. They come with 10 and 12-in. charts and in addition to all the features found in the recording thermometer, the recording-controller is offered in either the "On-off" or throttling control model. The former model, with a simple non-adjustable flapper, fits all ordinary temperature control applications. The throttling model, on the other hand, utilizes an adjustable calibrated flapper which provides an exact sensitivity adjustment and easy modification of the throttling range to coincide with any considerable apparatus lag. Some of the design details are presented in the caption of the interior view photograph. The cover is finished in black enamel and chromium trim.

Cycle Controllers

A NEW single-cam cycle controller that provides for the control of as many as four separate operations



THE new TAG recording thermometer and pressure gage design features include interchangeable calibrated tube system; stainless steel pen arm that is readily replaceable; precision-built capillary fountain pen with draftsman's split nib; and a light and strong pen arm support.

By **FRANK J. OLIVER**
Associate Editor, *The Iron Age*

o o o

is now being built by the *Bristol Co.*, Waterbury, Conn. The cam can be cut to meet a wide variety of requirements, such as found in plastic molding or rubber vulcanizing. Additional flexibility is provided through the use of adjustable segments. These instruments also have a special operating mechanism by which it is possible to obtain two different speeds of rotation before the cam completes a cycle. They are equipped with three-way leakless pilot valves, eliminating the need for a fixed air leak at the controller.

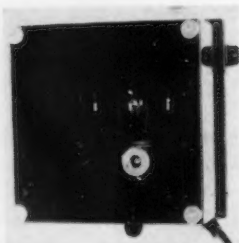
ANY desired variable temperature program can be automatically carried through without supervision by means of the new program control, made by *Wheelco Instruments Co.*, 1933 S. Halsted Street, Chicago. The program control consists of the program unit and a Wheelco controller mounted integrally. To the temperature control setting pointer of the Capacitrol is attached an idler arm which rides on the edge of the con-

toured disk of the program unit. The program disk is rotated by a synchronous motor through a gear reduction and can be cut to any time cycle desired with any variation of temperature control. The Capacitrol, operating on the Radio Principle, controls the temperature of the furnace to any point set on the scale by the setting pointer.

A NEW automatic time switch, type TSA-14, has recently been announced by the *General Electric Co.* for use in process timing. For the total time cycle, the contacting mechanism is driven through the spur gear train by a Telechron motor. The dial of the instrument is marked in per cent of total time, and the percentage of "On" time may be varied merely by rotating the dial until the desired percentage of "On" time is indicated by the pointer. Silver contacts (rated at 10 amp. at 230 volts) are mounted on the brushes, which bear on rotating cams. Steps in these cams snap the contacts open and close at the desired intervals.

Hardness Tester

IN the new direct reading hardness testing machine being introduced by the *Detroit Testing Machine Co.*, 5137 Trumbull Avenue, Detroit, there



THE instrument case of the new Bristol air-operated cycle controller is moisture and dust-proof, and the switches that control the electrical circuits in the controller are enclosed, as is the motor.



THE disk of the Wheelco program control can be replaced by other contoured disks to suit any required heating cycle.



AN all-glass cover is used to facilitate inspection of the G-E automatic time switch. A pipe nipple on the die-cast base allows easy mounting in a knockout of any switch box.

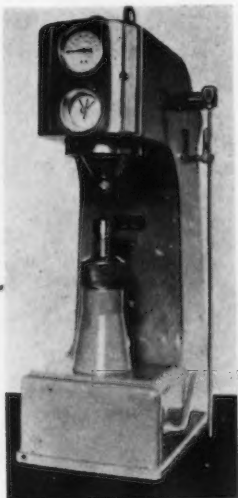
g and Melting Equipment

are no delicate mechanisms or electrical gadgets to get out of order, it is claimed. The piston is of the ground, packless, self-guided type and of generous proportions; maintenance is said to be negligible. The mechanism eliminates the use of a piston return spring, and the test load remains the same regardless of the height of stroke. Piping, together with operating valves, is contained within the body of the machine and all overflow is directly back into the reservoir.

The work screw and support may be locked rigidly, and the top of the base is machined to provide footing for special fixtures. The motor driven pump is of the rotary gear type, ball bearing mounted. The operating valve is directly connected to a foot treadle, leaving the operator's hands free. A plain power brinell machine, incorporating all the features mentioned above, except that of direct reading, is also being introduced at this time.

Heat-treating Furnaces

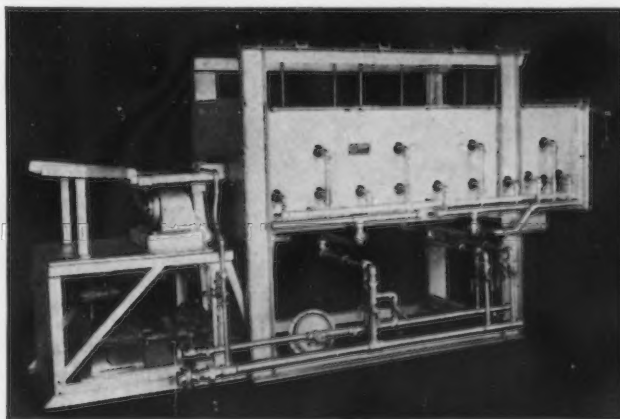
A CONTINUOUS clean-hardening machine of the reciprocating full muffle type is being offered by the



THE direct-reading hardness testing machine being introduced by the Detroit Testing Machine Co. has a piston of the packless, self-guided type.

NEW aids for the heat treater announced by the suppliers include recorder-controllers, program timers, a hardness tester of the direct-reading type, a novel type of hardening machine employing a reciprocating muffle, an annealing bell for wire, a laboratory type bench furnace, and a liquid carburizer offered by a company entering the field for the first time. Furnace parts are described, together with two designs of melting units for non-ferrous metals. Both gas and oil burners are reviewed, as well as a number of new refractory materials.

American Gas Furnace Co., Elizabeth, N. J. In it, the muffle is given a backward and forward motion, and the forward stroke is interrupted suddenly, causing the work to advance through the muffle due to its mo-



WORK moves progressively through the No. 166-BC continuous hardening machine by suspending the full muffle on hangers and reciprocating it. This is a product of the American Gas Furnace Co.

mentum. The most delicate work can be handled without distortion and heavy parts can likewise be moved through the muffle. A special sealing arrangement is provided at the discharge end and a special burner prevents ingress of air at the inlet. Muffle is of cast Nichrome and is suspended by eight heat-resisting alloy hangers.

The rate at which the work advances through the muffle can be varied and the capacity obtained ranges from 150 to 300 lb. per hr. Machines are supplied to use manufactured gas, natural gas, propane or butane. Firing is from both sides, both above and below the muffle, for maximum uniformity in heating. A single valve control system is ordinarily supplied, and any automatic temperature control can be used.

COMBINING a new uniformity of product, reduced cost and the flexibility which gas alone can offer, a new type of gas furnace known as the Square Bell annealer has recently been installed at the plant of the *Wilson Steel & Wire Co., Chicago*. The wire, in charges varying from 8000 to 14,000 lb. is placed on four spindles on a base. An inner cover is placed over the wire and the annealing bell, with the gas burners, is placed over



BY use of a special top brick, hearth slab and supports, the No. 89-C bench forge can be arranged as an oven furnace for heat-treating small parts.



WEDGE-SHAPED Nichrome castings have recently been made by the Driver-Harris Co., of Harrison, N. J., to obtain a rotary retort furnace with inside spiral bricked into the large tubular rotary retort. The spiral serves to carry the work through the furnace, by rotating the latter. These pieces must be quite accurate and free from warp in order to fit into a continuous spiral.

all by crane. When up to the heat, the outer cover is removed and transferred to another base. A non-oxidizing atmosphere is preserved about the wire, while cooling by the inner cover.

FOR the small shop or laboratory where a limited amount of heat-treating or forging is to be done, the new No. 89-C bench forge is offered by the American Gas Furnace Co., Elizabeth, N. J. When used for forging, it has entrances at both ends 6 in. wide by 2 in. high, with an inside depth of 6 in. The banded cover brick can be removed for heating long rods at some midpoint. For heat-treating, this forge is quickly converted to a semi-muffle type oven by other bricks furnished. The temperature for treating high-speed steel can be easily and quickly obtained. Welding heats can be obtained in 25 to 30 min. Air pressure is supplied from a low-pressure line or turbo-blower.

Carburizing Bath

NOW available from the Chapman Valve Mfg. Co., Indian Orchard, Mass., under special terms is a new liquid carburizer called Valcase, for which is claimed the ability to give maximum penetration in minimum time on all parts requiring a carbon

case that is deep, uniform and dependably hard. This salt can be melted in pot furnaces without excessive fumes or smoke. Parts are claimed not to pit nor decarburize, and will remain free from corrosion.

Temperature range of the bath is 1450 to 1700 deg. F., with the recommended operating temperature, 1650 deg. Work is placed in the bath a predetermined time, depending upon the temperature and depth of case required. Work may be quenched in oil, water or solution.

Furnace Parts

THE service life of nickel-chromium trays, such as are employed in carburizing furnaces of both the continuous and batch types, is being considerably increased by a novel cantilever-arm design developed by the Driver-Harris Co., Harrison, N. J. The new tray construc-



THESE Driver-Harris carburizing trays have been designed with cantilever arms to avoid warpage and to increase tray life.

tion consists basically of a frame with cantilever arms extending inwardly and outwardly from the cross members. Gaps are left between the facing tips of the cantilever arms.

This design permits free expansion and contraction of the alloy mass under the usual furnace operating temperatures from 1200 to 2000 deg. F. No severe strains are set up in the tray, and consequently the cause of warpage and cracking is eliminated. There is also a saving in weight reduction. Furthermore, the trays maintain straight and true bottom rails so as to slide or roll through the furnace without jamming.

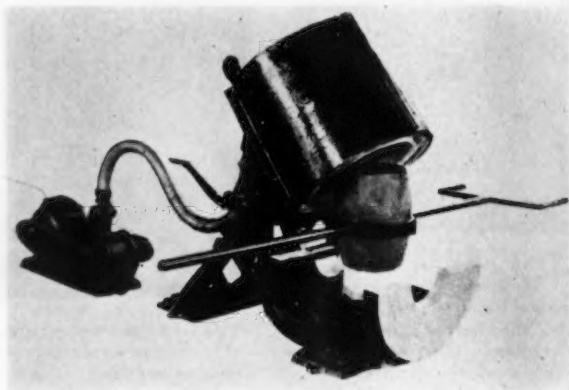
Heating Units

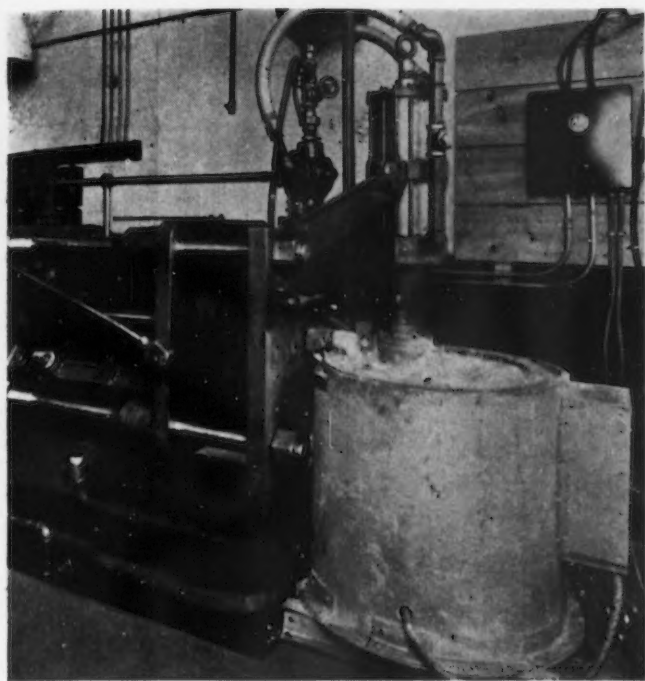
A NEW high-speed, high-heat Cal-rod heating unit has been developed by General Electric Co. for industrial applications that require temperatures up to 1500 deg. F., such as industrial ovens and hot plates. Although standard listed ratings range from 750 to 3500 watts and effective heating lengths ordinarily range from 18 to 84 in., other sizes and ratings can be furnished. Bends of $\frac{1}{2}$ in. radius can be made in the unit for fitting into the area to be heated.

Crucible Furnace

A GAS-FIRED crucible type brass melting furnace has been designed recently that reduces materially the labor involved in pouring. Such a furnace has been developed and is being sold by the Osborn Bronze Works, Clarksburg, W. Va. The principle involved is simply the inversion of the old type furnace, with the top forming a sort of hearth. The furnace is held in a frame supported from the base and is lifted up and tipped back from the hot crucible by a hand lever. What was once the top, now becomes a circular base that fits around the pedestal on which the crucible stands. This base is split and the two halves turn outward and vertically at the time the furnace cover is lifted.

A NEW crucible type of brass melting furnace, shown with the inverted furnace tilted back and the two halves of the hearth tilted out of the way so that the shank can be raised to lift the crucible from the pedestal.





With the furnace in the upside-down position, less heat will escape during changing of crucibles. The hazard of using tongs is also eliminated. The makers claim that with a gas furnace large enough for Nos. 60 and 70 crucibles, the average melting time on a charge of high bronze is only 40 min., with a maximum gas consumption of 600 cu. ft. of natural gas per hour.

Zinc Melting Furnace

ALTHOUGH primarily designed as an auxiliary unit for use in conjunction with die casting equipment, an induction type electric melting pot for low-melting-point metals, made by the *Detroit Electric Furnace Co.*, Detroit, may also be used as an independent melting unit for zinc and zinc-base alloys. The furnace is well insulated and is equipped with suitable controls to provide automatic regulation of electric power input and metal temperature. This results in a uniform product with a minimum of oxidization of the metal. Normal holding capacities are from 700 to 2500 lb. per unit; melting speeds are 500 to 800 lb. per hr. The electrical supply required is 230 volts, 60-cycle, single-phase, with maximum rating of 75 kva.

Hot Lead Pump

THE *Ruthman Machinery Co.*, of Cincinnati, has recently developed a molten solder or hot lead pump, known as model No. 15028. The de-

THIS Ruthman pump has been designed to handle hot lead or molten solder at the rate of 600 lb. per min. at 2-ft. head. It is useful in metal smelting, refining, galvanizing, die casting and soldering on a large, automatic scale.



sign retains all the features of the company's line of gusher pumps for handling coolants loaded with abrasive, but temperatures between 600 and 650 deg. F. and the much greater specific gravity of the metal necessitated special features. The heat condition is taken care of by a heat dispenser, consisting of a series of aluminum fans mounted on a vertical shaft within an open lantern, composed of compartments with fins between each. The lower anti-friction bearing is mounted within a separate lantern 2 in. below the motor and directly above the heat dispenser.

The pump is provided with twin intakes, one into the eye above and one into the eye below the impeller.

THIS all-electric die casting machine is equipped with an induction type melting furnace made by the *Detroit Electric Furnace Co.*

The impeller, small in diameter, has specially shaped blades to handle the heavy metals efficiently. The flow can be throttled to any desired amount without building up pressure. Motor frame is provided with lifting lugs for raising the unit from the reservoir when not in use.

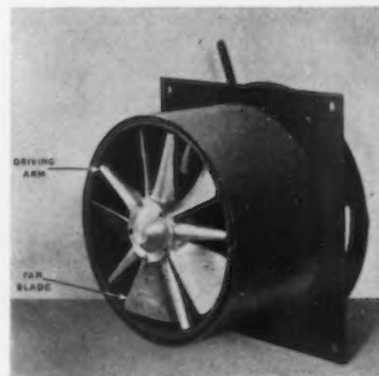
Gas Burner

A NEW principle of design is used in a line of rotary gas burners being introduced by the *Coppus Engineering Corp.*, of Worcester, Mass. The *Coppus-Dennis Fanmix* gas burner consists primarily of a fan with alternate hollow driving arms mounted on a hollow shaft carried in ball bearings. Gas, admitted through the hollow shaft flows into the arms and leaves them through orifices, the reaction causing the fan to rotate at high speed. At the same time, the fan blades deliver air for combustion and thoroughly mix it with the gas. The number of orifices as well as the gas pressure determines the total amount of gas flow so that the air-gas mixture can properly be proportioned.

The burner is said to discharge a perfectly combustible mixture and as a result, a smaller combustion space is required. No flame is visible, making the burner a radiant heat type. Other advantages claimed are: unusually high efficiency, absence of hot spots in the furnace, no cracking of "wet" gas and low cost of installation. The burner is primarily a high pressure type, operating at gas pressures of 5 to 40 lb. per sq. in.

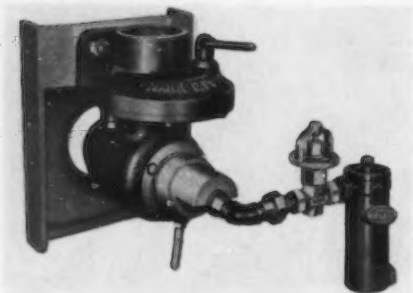
Low Pressure Oil Burners

THE *Mahr Mfg. Co.* division of *Diamond Iron Works, Inc.*, Minneapolis, has brought out a line of



THE *Coppus-Dennis Fanmix* gas burner combines driving arms through which the gas passes and fan blades that propel the air required for combustion.

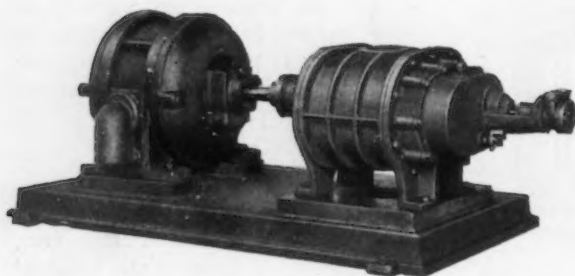
low pressure, triple atomizing oil burners, known as the 20 series. The burners are designed for use in industrial heating applications and are of rugged construction. By a new design of blast gate and burner mounting, the entire body may be re-



ABOVE
THE 20 series Mahr oil burners are a low pressure, triple atomizing type suitable for industrial heating operations.

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BELOW
THE fuel oil pump is attached to the blower housing of the Victor-Acme rotary blowers for use with industrial oil burners.



moved for repairs without disturbing the air line. The entire oil atomizing unit may also be readily removed for cleaning. Each burner is equipped with a fine mesh strainer and is supplied with oil through a Mahr type G regulating valve. Air control is by a lever on the internal unit. The burners can be readily converted for using high pressure gas.

Blower-Oil Pump Units

FOR use with industrial oil burners, the Victor-Acme rotary blowers, built by *Roots-Connersville Blower Corp.*, Connersville, Ind., are being offered in compact, self-contained units with the fuel oil pump mounted on the

blower housing and coupled directly to the blower shaft. Only one power source is required. These blowers are built for air volumes ranging from 5 to 700 cu. ft. per min. and for pressures of 8 oz. to 8 lb. per sq. in.

Insulating Blocks and Cement

ARMSTRONG CORK PRODUCTS CO., Lancaster, Pa., has recently announced Coprtex high temperature block and Coprtex heat insulating cement for service in high temperature equipment. Features claimed for the blocks are: a temperature limit of 1800 deg. F., low lineal shrinkage, superior insulating efficiency, high modulus of rupture, accommodation of rivet heads, lightness in weight and availability in standard as well as special shapes. The manufacturer recommends Coprtex cement for its high temperature limit, low lineal shrinkage, insulating efficiency, salvage properties, ease of application and its exceptional stickability.

THE high refractoriness of diaspore clay (hydrous aluminum oxide) with the extreme spalling resistance of super-duty fire clay brick is claimed for the new Laclede Peerlac refractory, now being supplied by *Laclede-Christy Clay Products Co.*,

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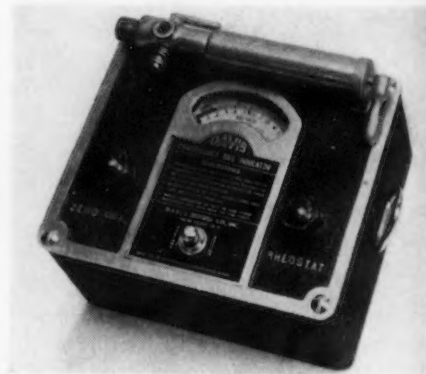
THE explosibility of gas-air mixtures can be read directly on the Davis combustible gas indicator.

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plastic refractory ramming mix suitable for repair work or complete monolithic linings in furnaces and kilns where the temperature does not exceed 2900 deg. F. It is claimed to exhibit negligible expansion or contraction, and to last longer than fire brick. Super-Vitramid is also available for special jobs operating at very high temperatures. Vitricast is a hydraulic setting, castable refractory and can be used at temperatures up to 2400 deg. F. It can be poured into forms or sprayed with a cement gun, and finds applications for door linings, hearths and tunnel kiln car tops.

Gas Indicator

A NEW combustible gas indicator for measuring directly the combustibility and explosibility of gas-air mixtures has been developed by the *Davis Emergency Equipment Co., Inc.*, 55 Van Dam Street, New York. A rugged 3-in meter shows the percentage of the lower explosive limit of the mixture being sampled. A test can be made in a few seconds and guards against the danger of introducing flames or sparks in explosive atmospheres. The indicator, complete with batteries, weighs only 6 lb. Two batteries give 3½ hr. of continuous oper-



ation, and when used intermittently permit a large number of tests to be made before renewal.

Doall Eastern Machine Co., under management of D. A. Moreinis, has opened an Eastern territory sales office and display room at 119 Lafayette Street, New York. Under his direction are J. M. Dillon, New England territory; L. A. Peirez, New York, and M. A. Singer, Philadelphia.

Allis-Chalmers Mfg. Co., Milwaukee, has moved its Dallas, Tex., district office, of which E. W. Burbank is manager, to 1800 North Market Street, where the power, electrical and industrial divisions of the company now occupy an entire building.

St. Louis. The commercial deposits in Missouri consist of a rock which is essentially diaspore bonded by fire clay. Peerlac is a combination of this diaspore blended with additional bonding clays that give it a fusion point above 3300 deg. F., making the brick suitable for furnaces with operating temperatures up to 3000 deg. The brick is also said to be non-spalling and non-shrinking and is unusually dense and strong, making it resistant to many types of slag ordinarily destructive to fire brick.

A LINE of plastic and castable refractory materials is announced by the *United States Stoneware Co.*, of Tallmadge, Ohio. Vitramid is a

Chevrolet Crankshaft Production

Almost a Continuous Cycle

By J. B. NEALEY

ONLY 4½ hr. is required to make the unmachined Chevrolet crankshaft. In that time the steel billet is heated, forged, heat treated and pickled in a plant so modernized with automatic devices and moving conveyors that the human equation has been cut to the minimum. This efficiency is possible because the furnaces are continuous and automatic both as to production and temperature control. This latter accomplishment is materially aided by the use of fuel gas.

Ordinarily, about five carloads of crankshafts are made daily at the Detroit forge plant of the Chevrolet Motor Division. The heating of these for forging is done in six furnaces of the pusher type and fired from the rear with gas burners. The billets, weighing 100 lb. each, are brought to the roller loading conveyors of the furnaces by monorail conveyor. From here they are pushed through the furnaces on water cooled rails. They are heated to 2280 deg. F. and remain in the furnace for 42 min. This heat is maintained with automatic temperature controls.

At the discharge end, transfer to the forging hammers is by tongs and monorail. The 12,000-lb. forging hammer die has three cavities in which the hot steel billets are successively struck and rolled while being broken down to rough shape and forged to final shape. The flash is then cut off and the tong holds separated in a trimming press. The flange is formed on one end in an upsetter and the crankshaft is finally restruck in two successive positions of the dies

in a 5000-lb. steam hammer. Less than a minute elapses from the time the hot billet is withdrawn from the furnace until the forged crank is transferred from the restrike hammer to a conveyor which carries it to the heat treating furnace.

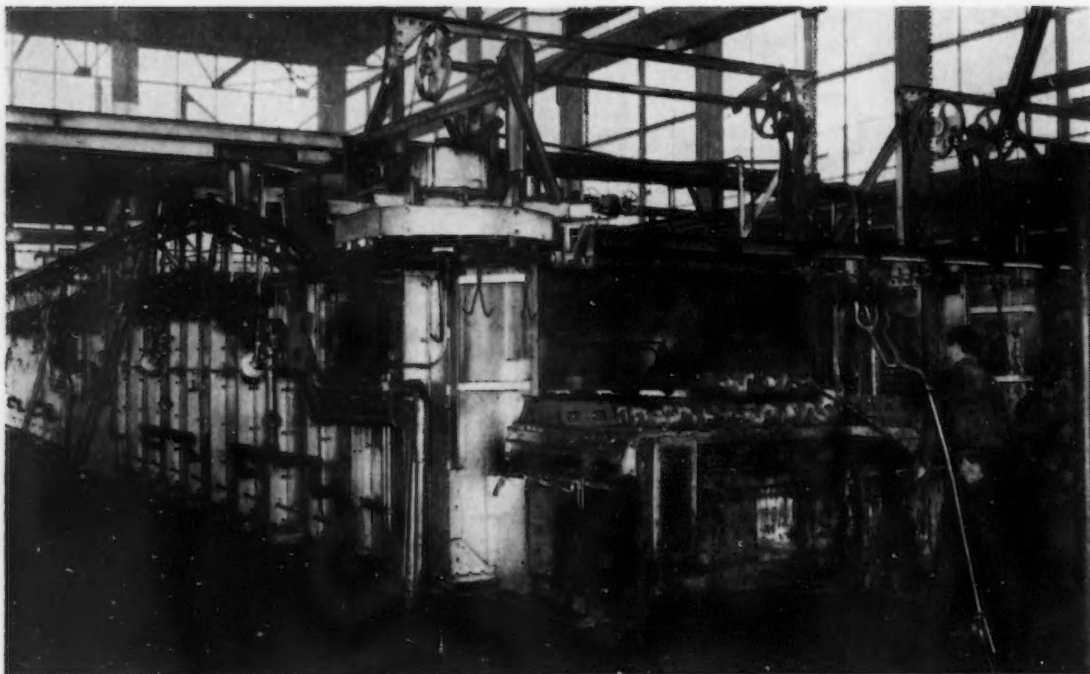
The scrap is disposed of by placing it on an overhead chain conveyor, equipped with hooks for the flash and

pans for the tong ends. This carries it to a yard with spur tracks and bins where trippers tip the flashings off into railroad cars or scrap bins as desired. The tong ends are carried along to another set of storage bins for later forging into hubs.

By a quick transfer from the restrike hammer to the heat treating furnaces, from 700 to 1000 deg. F. of



ONE of the six gas fired, pusher type forging furnaces for Chevrolet crankshafts. About 32 ft. long, the hearths are provided with water-cooled skids which support the 100-lb. billets. Temperature is controlled automatically.



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FOR heat treating crankshafts, a high heat and a draw furnace are arranged in tandem, with a quench tank in between. The furnaces are gas fired and are automatic and continuous in operation.

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heat is retained by the forged cranks, thus materially reducing fuel consumption. There are six heat-treating furnaces arranged in three units and fired with easily controlled fuel gas. Each unit includes a high heat and a draw furnace arranged in tandem with a quench tank between. While similar units have been similarly arranged before, few if any have ever been completely mechanized. The

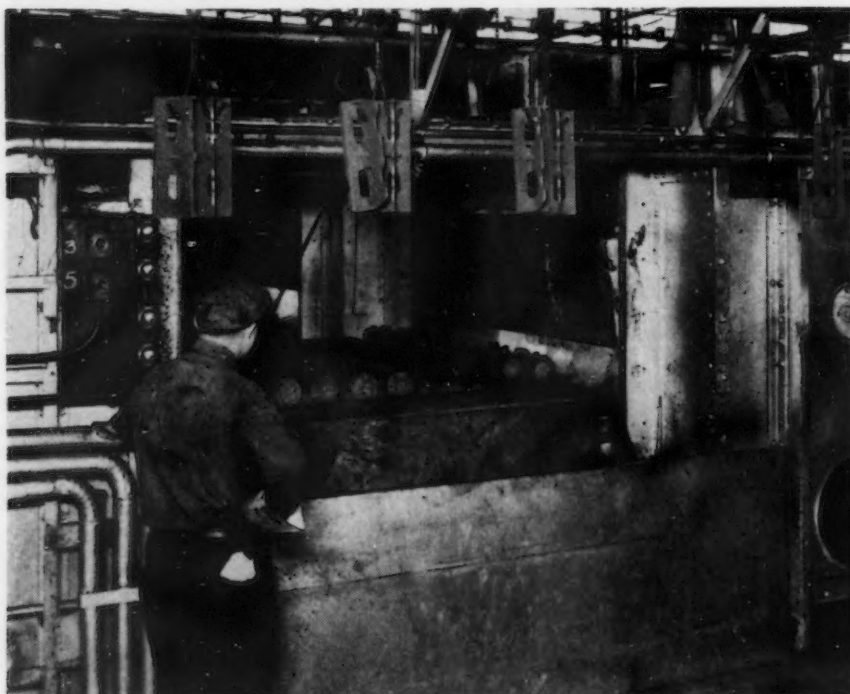
usual practice includes an operator to lift the hardened work from the quench to the draw furnace but Chevrolet has substituted a mechanical device. The furnaces are also automatic and continuous in operation.

The high heat furnaces are 35 ft. and the draw furnaces 40 ft. in length, respectively. They are heated by gas burners arranged along both side walls and the temperatures are regulated by

automatic controls with recording pyrometers located in a central control room. The burners are equipped with zero regulators which drop the gas to atmospheric pressure and they receive air at 2 oz. pressure. By means of venturi mixers, the gas is inspired by the air in the correct proportion.

Three blowers furnish all the air used by the gas burners of all 12 furnaces. These blowers are located on top of the central control room and the air lines to each of the furnaces are taken off the manifold at this point. These air pipes are arranged in rows in the control room and each is provided with a motor driven valve and temperature controller. In this way all the furnaces are under the constant supervision of the metallurgist. Inasmuch as some of the furnaces are zoned, there are 20 regulators and recording pyrometers in this room.

THE hot cranks on shoes are pushed out of the high heat furnace onto a rack over the quench tank. A set of steel arms lifts the cranks from the shoes, immerses them and then replaces them on the shoes ready to be pushed into the draw furnace.



Automatic Transfer from Quench

Each furnace is equipped with rails and mechanical pushers and the cranks ride through on shoes, in four parallel rows. Between the two furnaces and above the quench is a handling table or rack operated by a motor driven screw. This moves forward in synchronization with the opening of the discharge door of the high heat furnace and the hot cranks and shoes are pushed out onto it. Simultaneously, motor driven arms rise out of the quench, lift the cranks off the shoes, and upon withdrawal of the table, the arms lower the hot work into the

quench. After a sufficient interval, the cranks are raised, the table moves forward and they are replaced on the shoes. The table then brings the work in position for the pushers of the draw furnace.

The forgings are in the high heat furnace for 65 min. where they are heated to 1550 deg. F. They remain in the draw furnace 83 min. where they attain a temperature of 1100 deg.

The cranks are transferred from

the discharge and cooling table of the draw furnace to acid resisting hooks on an overhead monorail conveyor which carries them through a pickle bath. This pickling operation has been made entirely automatic. By passing an a. c. current through the acid bath and adding an inhibitor, the pickling time has been cut from 1 hr. to 15 min. The same conveyor carries the work through a rinse, past a grinder which grinds a spot on each

crank and past an automatic Brinell machine.

The hardness reading (286-228) is taken and the work finally inspected and gaged for correctness of throw, spacing of cheeks, etc. The cranks then go to the machine shop. Only 3 per cent fail to pass rigid inspections. This is a remarkable commentary on the efficiency of the gas fired furnaces and mechanical equipment of this division.

Huge Keller Automatic for Heavy Auto Body Dies

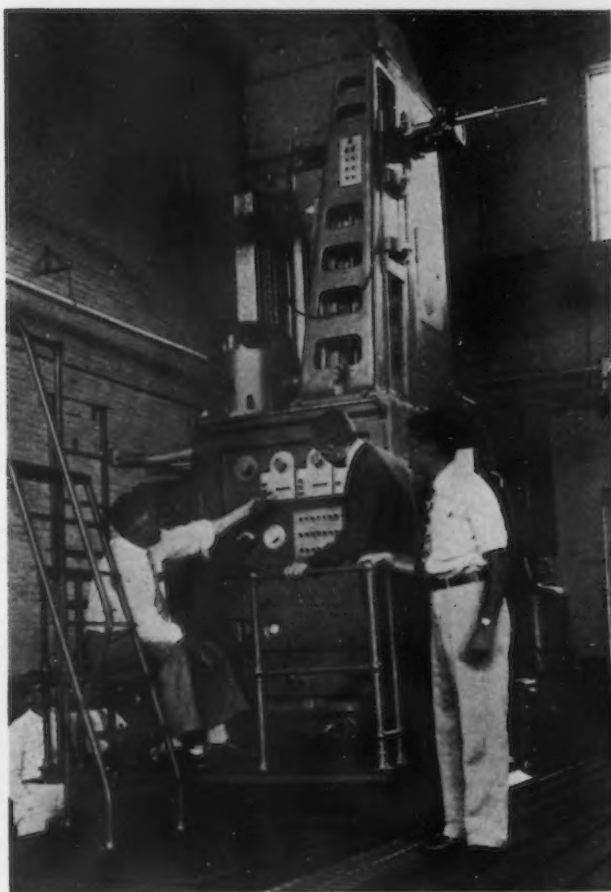
DIES for the production of very large auto body stampings will be made on the huge new Keller automatic tool room machine here pictured, which was completed recently by the Pratt & Whitney division, Niles-Bement-Pond Co., Hartford, Conn. For several days prior to shipment the machine was available for inspection by plant managers and other executives in the metal working field. In design it is similar to the Keller type BG 3 automatic described in THE IRON AGE of March 28, 1935, but embodies a number of refinements that add to its flexibility. Weighing 155,000 lb., with fixture, it is the heaviest yet built. Its cutting range is 12 ft. by 6 ft.

As in previous Keller machines the work and the model are bolted to a fixture which is placed vertically on a stationary table. The column moves horizontally along the machine bed, the saddle travels vertically, and the entire head of the machine moves transversely on the saddle. The head carries the cutter spindle and, above it, an electric tracer which through magnetic clutches controls the various motions of the machine.

In three-dimensional work such as auto body dies and punches, the machine is set to operate automatically, requiring no guidance by the operator. The operator rides on a platform attached to the saddle of the machine, from which position he can command, through push buttons and levers, any motion and make every operating adjustment.

An important element of the machine is the magnetic gear box through which both the horizontal travel of the column and the vertical travel of

• • •
LARGE Keller BG 3 automatic tool room machine for making dies for the production of very large auto body stampings. It is the heaviest yet built. At the right is A. S. Keller, manager, Keller sales department, Pratt & Whitney; at the left (sitting) is D. F. Butler, demonstrator, who will supervise installation of the machine.
• • •



the head are driven. Two adjustable-speed motors drive into this gear box, which is located on the rear of the column and contains magnetic clutches by means of which gears are shifted and direction of horizontal and vertical motion selected. In the previous BG3 machines both motions ran at the same speed; in the present machine the two motions are independently driven, thereby increasing operating flexibility. From his position at the head of the machine, the operator can energize any one of four gear selector clutches for each motion and thereby select the one which will drive the two directional clutches. Energizing of the

directional clutches may be accomplished by push button, but when the machine is under tracer control it is effected automatically. Further adjustment of speed is possible by rheostat control of the gear box motor.

A similar magnetic gear box drives the transverse motion of the spindle head. In this case, however, there are two selective speed magnets, driven by an adjustable-speed motor. The spindle drive is as heretofore, namely by a 10-hp. adjustable-speed motor mounted vertically on the gear box on the head. Spindle speeds are changed by means of three levers within easy reach of the operator.

Press Brake for Flexible Production

By CYRIL J. BATH

*President, Steelweld Machinery Co.,
Cleveland*

THE welding machine has brought to us not only the "puttin' on" tool we so often sighed for in apprentice days, but also a means of producing shapes and structures in partnership with a press brake. Just how much this may mean in money savings is not fully understood.

The tendency of many users on first

discovering the possibilities of welding is to do too much. A new-found freedom from patterns and foundries has perhaps led many a shop to go to extremes, which a more careful cost analysis might not permit. It is here that the press brake has come into the picture very decisively. Structures taken out of cast iron or riveted steel and put into welded form may often

prove no great economy. If the forms are restudied, and it is found that, with a certain amount of bending, the welding can be cut in half, or as is sometimes the case, to 10 per cent in the new design, simply by a prior shapement of the plate, then bending becomes an aid, not only to welding practice, but an aid to efficient and less costly production.

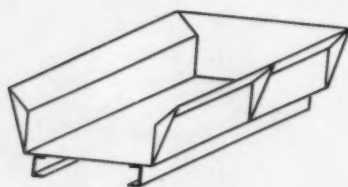


FIG. 1

STIFFENING angles may often be dispensed with or at least diminished in number when the sheet metal is formed on a press brake. An example is the commercial truck body.



FIG. 2

SPECIAL angle, with counter-sunk corner for joining legs of a derrick.



FIG. 3

SECTION of a support for a conveyor, fabricated on a press brake.

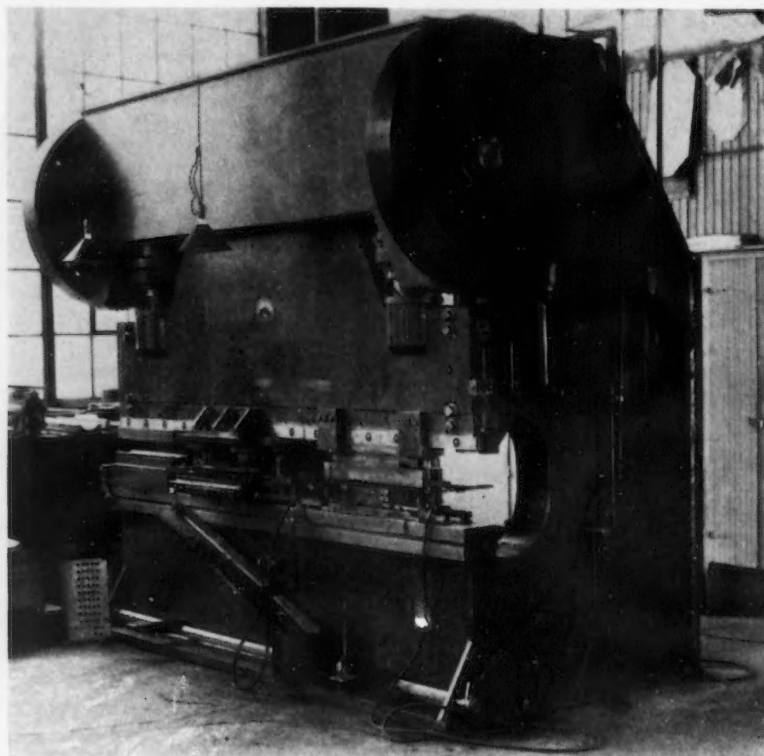


FIG. 4

PRESS brake used by a manufacturer of gas heating units as a straight line production punching machine. From the sheared blank, the piece goes through four successive operations in this Steelweld brake.

A relatively small shop must carry quite a steel stock to take care of its varied needs. With a press brake, angles and channels of any shape can be made, and very often indeed the need for angles and channels, or other members attached to the plate, can be entirely dispensed with by forming the plate itself. A good illustration of this is the commercial truck body, Fig. 1.

A prominent manufacturer of oil well rigs and derricks used to make a particular type of angle for joining the legs of the derrick together. He could not use an ordinary rolled angle, because he could not get the angle of the leg up into the corner. He had to make a special angle with the inner surface countersunk, as shown in Fig. 2. He used to do this hot, on bulldozers, and then punch it afterwards. With a press brake he was able to do this operation cold, very simply, and punch the piece in an adjoining operation on the same machine. In other words, he avoided heating, cooling, re-handling, and did the whole job at one set-up at a very considerable reduction in cost. The same manufacturer had anchor bolts which he would bury in concrete, for the purpose of holding the derrick up straight. These consisted of 2½-in. or 3-in. round rods, which he was heating and bending in bulldozers, using three men. A simple die in the press brake enabled him to do the whole operation cold and at one blow.

The wrinkly looking article shown in Fig. 3 is a support for a conveyor. It was formerly made hot in seven operations, and the job had not only to be bent, punched, and countersunk with a drill, but the time involved, including two heatings, fabrication in five machines. Three dies in a ¼-in. x 10-in. production brake enabled him to do his bending, punching, countersinking, and forming, without putting the piece down, and in only a few minutes' time. The heaviest job was, of course, the countersinking, which was really a coining operation and took some 375 tons.

The application of the press brake as a production tool, is only a limited part of its field, but to do punching, drawing, forming, notching, and bending, in successive operations is certainly to take full advantage of what is a very universal type of machine. The modern production type of brake has come a long way from the early cast iron, or bolted section machine. Requirements such as are frequently met in airplane construction, giving tolerances of only 0.005 in. or 0.006 in.



FIG. 5

DICTAPHONE cabinets being formed notched and punched from sheets in a gang set-up on a press brake.

in 14 ft. lengths, punching with as many as 150 punches in a 12-ft. length, some of them only ⅛ in. in diameter, and spaced less than ¾ in. apart, requires a high degree of tool accuracy.

As applied to the manufacture of stainless steel, which is a growing factor in so many lines of industry, the production brake has pointed the way to very considerable economies.

New "Z" Nickel May Be Heat Treated

(CONTINUED FROM PAGE 39)

130,000 lb. per sq. in., and 155,000 lb. per sq. in. Heat treatment increases these limits by 30-70,000 lb. per sq. in.

Since the hardening treatment is carried out at relatively low temperature, the strength and hardness developed from cold reduction or other cold work is largely retained. In effect, the hardening developed by the heat treatment is superimposed on that produced by the previous cold work. Sizeable cold reductions are practical on light sections—65 per cent on wire finished to 0.125 in. diameter, 60 per cent on 0.250 in. strip, and 10 per cent on 2 in. diameter rods. Somewhat higher reductions are possible in special cases.

Quenching from 2000 deg. Fahr. is required to render "Z" Nickel susceptible to heat treatment. For the convenience of users, "Z" Nickel may be obtained already quenched and suitable for fabrication of parts which can be hardened in finished or semi-finished form.

As close temperature control (plus or minus 10 deg. Fahr.) is important in the thermal hardening of "Z" Nickel, the most suitable equipment is an electric furnace with automatic temperature controls. With suitable equipment, the hardening of "Z" Nickel is said to be very simple.

THIS WEEK ON THE

By W. F. SHERMAN
Detroit Editor

ASSEMBLY LINE

... Long term confidence rises ... Hand-to-mouth buying decreases ... Pontiac and Chevrolet recall men to produce 1939 models ... Plymouth sets price pace with \$15 reduction ... Ford steel inventory placed at 10 to 15 million dollars.

DETROIT.—A 14 per cent decrease in hand-to-mouth buying, the fifth consecutive monthly drop shown by the buying trend index for Detroit, was registered during August. In addition, confidence for the six months immediate-

ly ahead is being displayed by at least 11 per cent of the important purchasing agents in this area, according to a survey of the Purchasing Agents Association of Detroit.

Data for the last month show that hand-to-mouth buying dropped from

34 per cent in July to 20 per cent. In this essential we are back to the conditions prevailing last September and October and the rate of improvement in management's attitude, as shown by the graph herewith, is nearly as rapid as the decline was then. Coincident with this, there has been an increase in 30-day and 60-day buying. The 30-day group has gained two points, to 22 per cent of the total, and the 60-day group has increased from 23 to 28 per cent. The 90-day group has dropped slightly, from 19 to 18 per cent.

One of the most significant changes is an increase from 4 to 11 per cent in the group buying on a six-month basis. Not since June, 1937, has there been any considerable buying this far in advance of production needs, although in prosperous times at least 18 to 20 per cent buy their requirements a half year ahead of time.

The action of the Purchasing Agents Association in collecting these data during the midsummer months is significant and represents something of a change in policy; heretofore, there has been little activity to justify an August survey. The year 1938, however, is presenting a different story with more all-round activity shown this summer than in a long while.

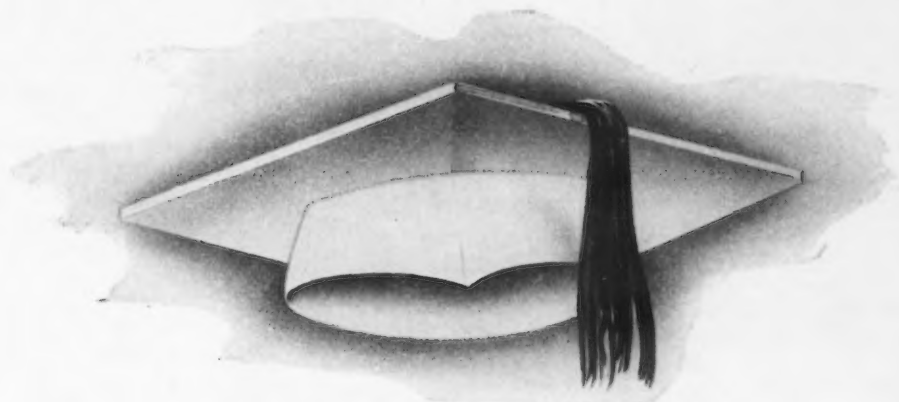
Output to Move Up Steadily

A prediction that automobile output will move steadily up during September and will aggregate around 145,000 units, has been made by Ward's Automotive Reports. This would fall short of the 175,630 cars and trucks produced last September, but would certainly be the best month of the present year. Output during the last week totaled only 17,485 units, a decline from the previous week's 22,165 because of production lost on Labor Day and the wind-up of 1938 model production by one of the large producers, Ford Motor Co. In the com-

General Motors Executives View New Buick

"IT'S a honey!" said William S. Knudsen, president of General Motors, after giving the 1939 Buick its first spin on the factory private proving track. He congratulated Buick's top executives, including O. W. Young, Buick general manufacturing manager (in the white shirt); Harlow H. Curtice, Buick president (leaning on the hood of the new car), and Charles A. Chayne, Buick chief engineer (at the far right). On Mr. Knudsen's first trip in the car he was accompanied by Albert Bradley (left), General Motors vice-president.





THERE'S *Logic*

IN BUYING BARNES-MADE SPRINGS

To protect your purchases of springs and to insure for you a consistently dependable source of supply, these production safeguards are always on the job in the plant of the Wallace Barnes Company:

1. A specialized crew to enter, route and check your order all along the line.
2. Compact production units capable of quick shift-overs in case of emergency, with maximum speed on replacements and hold-ups kept at a minimum.
3. Completely stocked warehouse fed by Barnes' own mill—specializing in high-grade cold rolled spring steel.
4. Experienced trouble-shooters to help unravel the kinks in your spring design or performance.

*Check these safeguards for yourself by a visit to the plant . . .
or by letting us handle your next order*

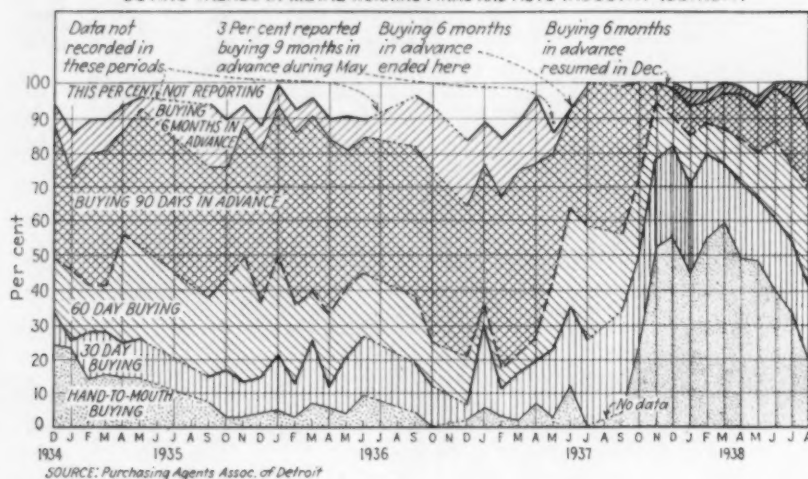
WALLACE BARNES COMPANY

Division of Associated Spring Corporation

BRISTOL, CONNECTICUT

SPRINGMAKERS FOR MORE THAN THREE QUARTERS OF A CENTURY

BUYING TRENDS IN METAL-WORKING FIRMS AND AUTO INDUSTRY (DETROIT)



parable period last year 59,017 units were assembled.

Last Friday Pontiac recalled 4600 men to work and during the current week is reemploying thousands more as production is pushed up toward normal volume. Pontiac's addition to the 1939 assembly lists raises the total to five, with Buick, Packard and Plymouth having started around Aug. 15 and Studebaker getting under way earlier last week.

On Monday of this week 8000 men were called back to work at Chevrolet plants in Flint. The pressed metal and motor division resumed operations with full crews. The final assembly line is likely to start work on 1939 models in about two and a half weeks.

New Designs Favorably Received

General reaction to 1939 designs as they make their appearance has been excellent and dealers are reporting

more widespread interest than at any time since 1935 when extensive design changes accompanied a rising buying market. In particular, it appears that Plymouth has a chance of making a fine showing during the next year. Somewhat lower prices for 1939 models as compared with those for 1938 cars were announced late last week by Plymouth, the first to set a figure. Reduction amounts to a maximum of only \$15—less than anticipated. Of course, this year Plymouth has added numerous features and obviously improved the quality of its product and these facts offset some of the lowered cost due to cheaper materials. K. T. Keller, president of Chrysler, has expressed the opinion that the 1939 buyer will be willing to pay for a good product with pleasing appearance and extra comfort, such as coil spring suspension.

One of the important selling points for the entire Chrysler line of cars this year is the Superfinishing of many of the moving, wearing parts. The process, currently being discussed in a series of articles in THE IRON AGE, was explained to many Chrysler executives in sales and advertising departments at a meeting in a conference room at the Chrysler Jefferson plant last Thursday. D. A. Wallace, president of the Chrysler sales division, who conceived the process, invited practically all of Chrysler's top engineers, production men, divisional sales managers, advertising heads and a select group of presidents and engineers of machine tool companies to hear his own story of the development.

Automotive observers generally concede that the Ford is due to win added popularity this year because of the change to hydraulic brakes. It is pretty generally known that many customers shied away from the mechanical brake, having been so thoroughly sold on hydraulics since their introduction a few years back. It may be that Ford will be able to improve its relative position in registrations merely because of the change in braking system.

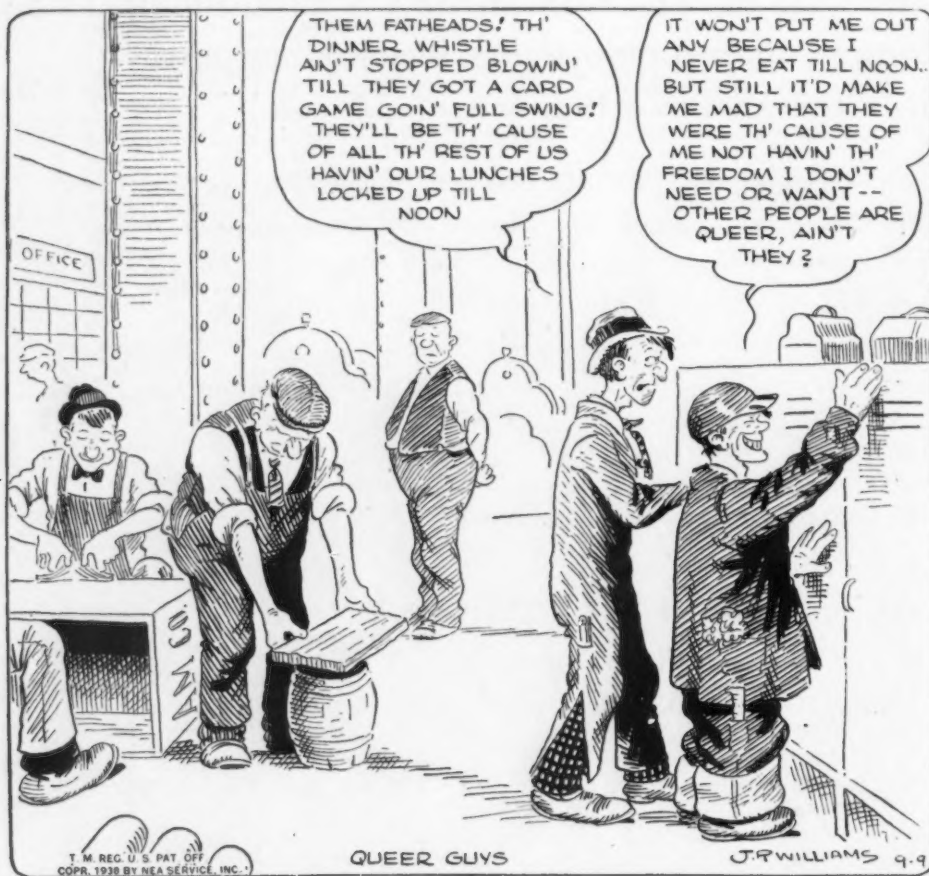
Ford Has Large Inventory

"How big is Ford's steel inventory?" That's a popular question with visitors out at the Rouge and they seldom get the right answer. One Easterner went back home a while ago with an estimate of \$20,000,000 as the value of Ford's present stock of steel. The figure occasioned a lot of comment, but it isn't too far out of line.

(CONTINUED ON PAGE 76)

THE BULL OF THE WOODS

BY J. R. WILLIAMS



300 Houses for Workers at Clairton Take More Steel

PITTSBURGH.—Steel used in the 300 houses to be constructed at Clairton, Pa., will represent approximately two and a half times the cost in conventional construction. This interesting angle was disclosed last week when ground was broken for the \$1,500,000 Colonial Village by John Lester Perry, president, Carnegie-Illinois Steel Corp., Pittsburgh.

The Colonial Village is the first large-scale housing operation in the country to be approved by the Federal Housing Administration, in which the individual can own his own home. It is being constructed by the Pennsylvania Housing Corp., composed of a small group of Pittsburgh individuals who will engage in constructing multiple housing projects throughout Western Pennsylvania. Construction is under the supervision of Gilbert-Varker Co., Boston, New York and Philadelphia. The New York

Life Insurance Co. has furnished part of the funds necessary for the operation.

Carnegie-Illinois Steel Corp. has cooperated to the extent of making available information regarding the use of various rolled steel products and the main purpose of the village is to house a portion of the employees of the new Carnegie-Illinois Irvin works which will be formally opened soon. The steel company, however, is in no way connected with the actual building and sale of the houses.

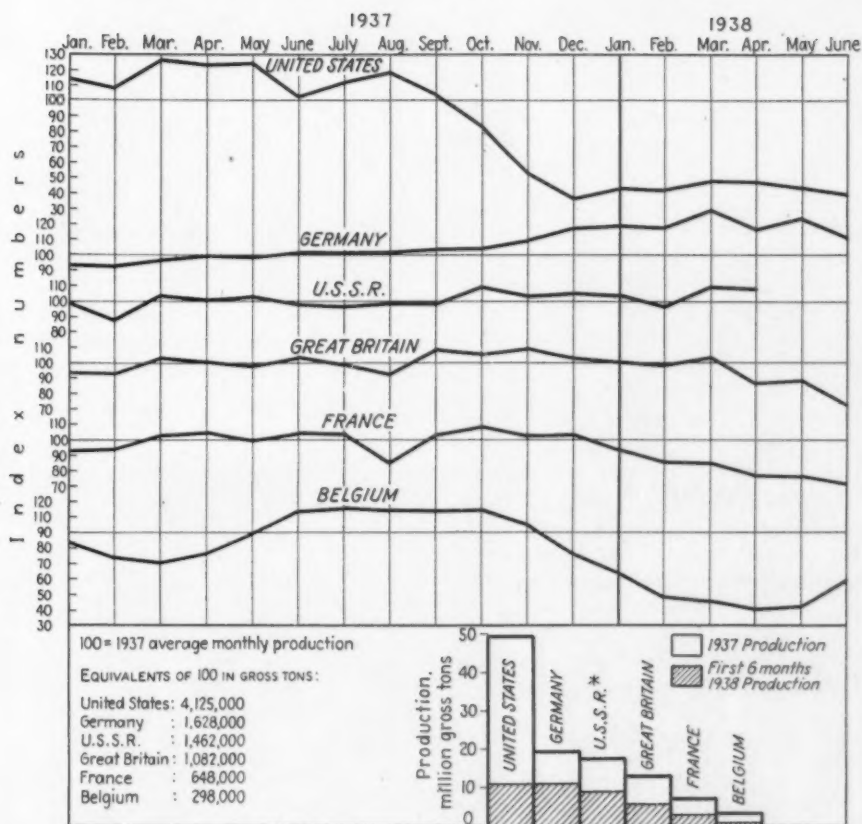
Steel products to be used in this project have competed on a strictly cost basis with other materials. Shutters, cornices, corner pieces, unit window frames and trim and porch hoods will all be fabricated from enameling sheets. Stairs leading to the basement and second floor will be pressed sheet steel construction and even the stair rails will be twisted bars. Enam-

eling sheets will be extensively used in the bathroom and kitchen, and in the former room enameling sheets are to be utilized for a portion of the walls, while the bathtub, lavatories and sinks will be made from pressed enameling sheets.

All closets in the house are to be of specially designed sheet metal. The ribbon supporting second floor beams will also be a rolled steel product, as will be all radiator covers. All housing units will be insulated with Ferro-Therm, a terne plate product, which when properly set between the sheeting and the inside wall, has a high heat reflecting characteristic. Structural beams and pipe columns are to be used in the cellar to support the units.

Cost of these colonial frame houses will run from \$3,990 to \$5,310, with down payments as low as \$555 and which will include all closing charges without exception, such as title insurance, fire insurance, etc. The purchase of the units can be completed by monthly payments of from \$28 to \$34. The houses are for sale to the general public.

Trend of Steel Output in Major Producing Countries



* May and June production estimated.

THE graph published herewith illustrates the extent to which steel production in the major producing countries has been affected by changing industrial conditions over the past 18 months. In the first six months of 1938 the United States, Great Britain, France and Belgium have been producing at a rate considerably less than the 1937 average, while in U.S.S.R. and Germany production has been consistently above the average of 1937. Steel output in Germany in the first half of the present year was the highest of any country in the world, and exceeded the output of United States, previously the world's largest producer, by 32,856 tons.

THIS WEEK IN WASHINGTON

... President approves \$48,279,000 loans to 30 additional cities for low-rent housing program as United States Housing Authority seeks to check long lag in construction industry ... Many steel executives to be called in monopoly inquiry.

° ° °
By L. W. MOFFETT
Resident Washington Editor
The Iron Age
° ° °

WASHINGTON.—The Administration's enterprising housing program, advanced early last winter as the first answer to the economic recession, is progressing to the stage where it will be given the acid test of whether, as claimed by sponsors, it can put a stop to the lag in the construction industry in evidence since 1927.

Spearhead of the program is the United States Housing Authority, headed by Nathan Straus, who last week announced Presidential approval of loan contracts totaling \$48,279,000 to cover 90 per cent of the \$53,662,000 estimated cost of 30 additional projects in 18 cities. This action brought the total of USHA loans to local housing authorities up to \$202,807,000 for 43 cities. In addition to the \$202,807,000 represented in loan contracts, the USHA has earmarked \$316,466,000 for additional cities, making a total of \$519,272,000 in commitments for 129 cities participating in the slum-clearance and low-rent housing program.

Mortgages at New Peak

At the same time, FHA's amended program for insuring small home mortgages reached a new monthly peak in August, the agency announced, with mortgages selected for appraisal amounting to \$104,226,887, an 11 per cent increase over July and a 115 per cent increase over August, 1937. Mortgages accepted for insurance (commitments), of which approximately 70

per cent cover new homes, totaled \$67,877,900 in August, which represents an increase of 12 per cent over July, 84 per cent over August, 1937.

The \$800,000,000 slum-clearance and low-rent rehousing program of the USHA is calculated by sponsors to eventually provide 700,000,000 man-hours of labor while providing better homes for approximately 160,000 low-income families. The agency estimates that \$700,000,000, or more than three-fourths of all the money to be invested in local low-rent housing projects, will be spent on building materials, contractors' fees and construction labor.

No Pay Cut Contracts

Seeking to prevent labor trouble, Administrator Straus has announced that all slum clearance projects will be covered by "no-strike-no-pay-cut" contracts with labor unions. It was stated that 90 local building trades councils involving 300 unions have signed such contracts.

Unlike the old housing program handled by PWA Administrator Ickes under which \$140,000,000 worth of low-cost housing projects were constructed during the past four years, the USHA program definitely puts the Government into the public housing field on a permanent basis. While the \$800,000,000 is available for the program during the next two and one-half years, the Government's interest and responsibility in the matter goes far beyond that. After construction is completed Federal subsidies covering a period up to 60 years, are to be paid together with local subsidies to permit low-income groups to have the advantages of better housing facilities.

Subsidy Is Paid

Since the revenue from rent payments is not sufficient to cover the cost of building and maintaining the projects, the Housing Authority

makes up the difference and pays an annual subsidy of not to exceed 3.5 per cent of the total cost of the project. The local community pays one-fifth of the amount of the Federal subsidy, usually in the form of tax exemptions.

During the next two and one-half years, the USHA has \$500,000,000 to loan to local housing authorities at 3 per cent interest. The local authority (there are about 147 in 27 states thus far) takes the money, adds 10 per cent more raised by bond issue, selects its site, buys the land and starts construction in accordance with the standards prescribed by the USHA. Cost of the projects must not exceed \$1,000 a room or \$4,000 per dwelling in small cities, or \$1,250 a room or \$5,000 a dwelling in cities of over 500,000 population.

Some Cities Hold Back

While the USHA is not hamstrung by court actions as was the PWA housing program when Harold L. Ickes was blocked on all sides, it still has a good many hurdles to take. Thirty-three states have passed low-rent housing legislation but in six of these no local housing agencies have been set up and in several of the 33 the laws passed are not completely adequate to qualify them for Federal assistance. However, when the law became effective last December, there were 46 local housing authorities. Today there are 147 and Administrator Straus reports that despite the reluctance of some communities to participate in the program, the requests for loans are coming in at a rate which may soon exhaust funds available for earmarking.

To date, courts in seven states have passed favorably on the validity of various provisions of public housing legislation. One case still is pending in Illinois, the USHA says.

ICC Suspends Steel Rail Rate Increase

WASHINGTON.—The Interstate Commerce Commission has suspended from Sept. 6 to April 6, railroad tariffs proposing sharp increases in rates on iron and steel products in carloads from points in the

LIFE

OF MACHINE TOOLS IS PROLONGED WITH SUNOCO

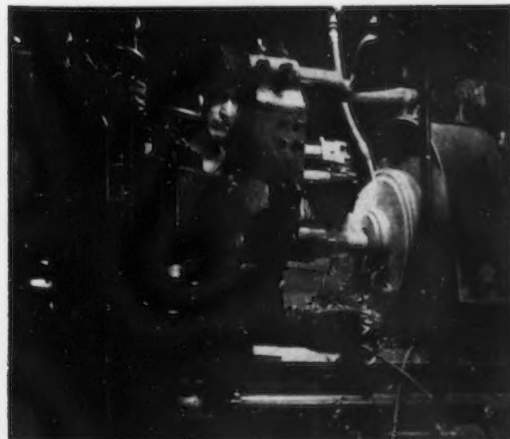
Speed and cost of production with today's machine tools depend on the life span of cutting tools!

Flood the tools and work with SUNOCO Emulsifying Cutting Oil. Its high lubricating and heat absorbing qualities make possible increased production, more pieces per tool grind and better finishes, with less time out for replacing and resetting tools.

Whatever the metal cutting operation SUN Cutting Oil Engineers will welcome the opportunity to discuss the selection and application of cutting lubricants for your own metal cutting operations.



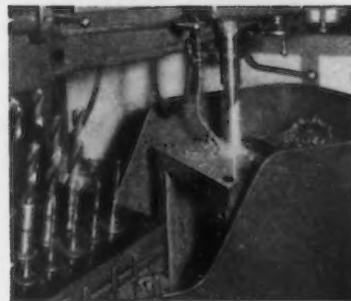
TURNING, on the modern lathe, is aided by SUNOCO in producing accurate work at high speeds with less "down time" for tool resharpening and resetting.



MILLING cutters will hold their cutting edges longer with SUNOCO.



COLD SAWING steel bars or billets with SUNOCO insures clean, straight cuts with long blade life.



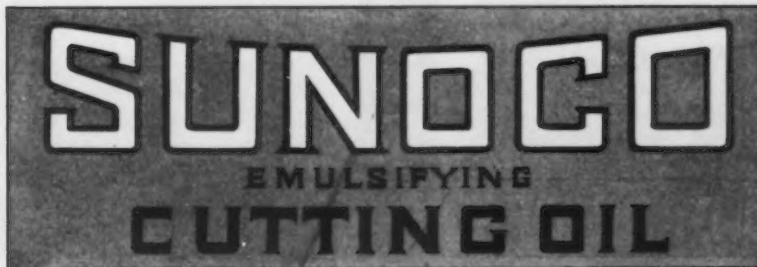
DRILLING is speeded up—drill grinds are decreased with SUNOCO.



GRINDING machines produce more, accurate quality finish pieces per abrasive unit with SUNOCO.

SUN OIL COMPANY, PHILADELPHIA, PA., U. S. A.

Offices and Warehouses in more than 100 cities



USE BISCO TUBING

YOU PAY LESS -for Steel -for Labor

There is no need to pay for steel you don't use, or the labor needed to cut it into small chips . . .

Yet that is just what you do, when you make bushings and rings from solid stock.

It's better to make them from BISCO STEEL TUBING—which comes in all diameters up to 14 inches.

Have some in stock, of the sizes most often used. You'll save time as well as money.



BISCO TUBING

Tool Steel
Alloy Steel
Stainless Steel
Cold Drawn Steel
For Mechanical Uses
For Ball Bearings

All fine steels
in the form of
TUBING

THE BISSETT STEEL COMPANY

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CLEVELAND, OHIO
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307 Main St., Buffalo, N. Y.

ORDER FROM STOCK

South to points in Official Classification territory. Illustrative of the suspended tariffs are the proposed rates of 62c. and 66c. per 100 lb. to Baltimore and New York, respectively, from Chattanooga, Tenn. Both destinations now take a common rate of 48c.

The commission also has ordered canceled proposed reductions in commodity rates on iron and steel articles, in truckloads or volume, from Lebanon, Pa., to Bayonne, Camden, Elizabeth, Jersey City, Newark, New Market, Paterson, and Trenton, N. J., and Staten Island and New York City. The commission said that, while

evidence shows that the proposed rates are unduly low, unreasonable and unlawful, it would leave for future prescription of minimum lawful rates on iron and steel products for its report in a pending motor carrier case. In this case, the commission said, it will have a comprehensive record embracing testimony by all common carriers by motor vehicle operating in the affected territory.

The reductions were proposed by the T. C. Heffelfinger Estate of Meyerstown, Pa. Protest against the schedules was made by the Middle Atlantic States Motor Conference, Inc.

Many Steel Executives Will Testify in Monopoly Inquiry

WASHINGTON.—What lies in store for the steel industry at the hands of the Temporary National Economic (monopoly) Committee probably will be indicated soon. It will be given an early hearing.

Steel is definitely not marked for breaking down into smaller units merely because it is large, if the view of Thurman W. Arnold, Assistant Attorney General, in charge of the Anti-Trust Division of the Department of Justice, prevails. Mr. Arnold is expected to be the leading Administration figure to shape a legislative program growing out of the broad inquiry with its many ramifications.

The full monopoly committee planned to meet in Washington this week to arrive at a decision as to when the hearings will begin, probably about the middle of October. While it was definitely stated that steel will not be the first and perhaps not the second or third industry heard by the committee it likely will be high on the list for consideration.

Steels' Economics Studied

A. H. Feller, in charge of the Department of Justice steel study, told THE IRON AGE that it is not possible to say exactly where the steel industry will fit in at the hearing. He said that the economics of the industry are being studied by the Department of Justice, the Department of Commerce and the Federal Trade Commission. These branches he said, are working on individual situations and are correlating their activities in order to avoid overlapping and to facilitate preparation of the material to be laid before the com-

mittee. No indication has been given as to how many steel executives will be called but it is likely there will be a formidable array of them. At the same time the Department of Justice plans only to subpoena records which it proposes to use rather than calling for wholesale and miscellaneous files.

Mr. Arnold's statement that mere size is not in for condemnation is clarifying in view of persistent current reports that bigness was to be considered a sin and would get the avenging legislative ax, Congress willing. There can be no question that this philosophy has been entertained within the New Deal, although Mr. Arnold has said he knows of no group that desires to break up efficient mass production. Those who have assailed bigness as such have complained of its so-called "potential," if not applied, power, to control prices or because large units even if their prices are fair are, despite themselves, responsible for price leadership. And price leadership has been attacked because it is alleged it sets up "rigidity of prices," the bane of a group of Government economists and legalistic stars.

Not Frightened Over Size

But Mr. Arnold does not share this concern over bigness.

"We only desire to condemn combinations going beyond efficient mass production which have become instruments arbitrarily affixing inflexible prices or exercising coercive power," Mr. Arnold has said.

"The line between efficient mass production and industrial empire

building cannot be drawn in the abstract. It can only be clarified with respect to particular industries. Both the application of the Sherman Act and the decisions as to what legislation is required to supplement the act require the exercise of judgment on two questions. The first is this: Does the particular combination go beyond the necessity of efficient mass production and become an instrument of arbitrary price control? The second question is: Does any particular arrangement affecting marketing practices tend merely to create orderly marketing conditions in which competitors can exist, or is it an instrument to maintain rigid prices? Obviously the answer to these questions can only be a question of controlled judgment made after factual investigation of the particular industry."

Price Adjustment Necessary

A law like the Sherman Act, he has stated, obtains concrete meaning only when applied to concrete situations. The Sherman Act, he pointed out, is interpreted according to a rule of reason. This was declared to mean that it is not a question of breaking up large business into small ones regardless of their efficiency. This, Mr. Arnold explained, is neither the idea of the policy, nor should it be the ideal of further anti-monopoly legislation.

Mr. Arnold does hold to the view, however, and has said to THE IRON AGE, that prices must be adjusted to production. He has expressed the conviction that "we are being forced to abandon our former policy of easy acquiescence and industrial empire building by the failure of great industrial empires to adapt their price policies so that they can distribute the goods which they are capable of making and so they can employ labor and run their plants at capacity." The department, he stated, is being forced to take control of inflexible price structures and coercions in restraint of trade today just as in 1933 "we were forced to take control of the financing and marketing of securities." He maintains that if sellers were interested in distributing goods, rather than being interested in getting more than their fair share of business expansion the moment times get better, they would lower prices when business expanded in order to run their plant at capacity and to employ more labor. These high prices, it was stated, make inventories pile up and "we shortly find ourselves in another depression."

Just now the department has a staff which is closely scrutinizing the steel



This photo shows what excellent seeing conditions are provided when light conditioning was installed in this American Tobacco Co. office.

HOW LIGHT CONDITIONING SPEEDS WORK IN AMERICAN TOBACCO CO. OFFICES

THE American Tobacco Company, makers of Lucky Strike cigarettes, recently light conditioned all five floors of office space in their 111 Fifth Avenue Building, New York City.

Although the former lighting installation provided 20 footcandles of illumination, the new lighting with G-E MAZDA lamps in totally indirect luminaires provides between 32 and 38 footcandles.

Both office employees and company officials say that the new lighting speeds work because they can see more easily and tire less rapidly.

Like many other leading companies, the American Tobacco Company uses G-E MAZDA lamps for light conditioning their offices. For these lamps are brighter than ever before and give more light at no additional cost for electricity.

For details on how light conditioning can increase efficiency in your plant or office, write to General Electric Co., Dept. 166-IA, Nela Park, Cleveland, Ohio.



USE A G-E LIGHT METER TO MEASURE YOUR LIGHTING

Every office manager and plant superintendent should have one of these G-E Light Meters that measure light simply, quickly. It shows instantly whether you are getting enough light for safe seeing in any office or industrial operation.

It costs only \$11.50 post-paid. Your lighting company will gladly measure the lighting in your plant or office with one of these Light Meters and show you how to improve seeing conditions.

GENERAL ELECTRIC
MAZDA LAMPS

They stay brighter longer



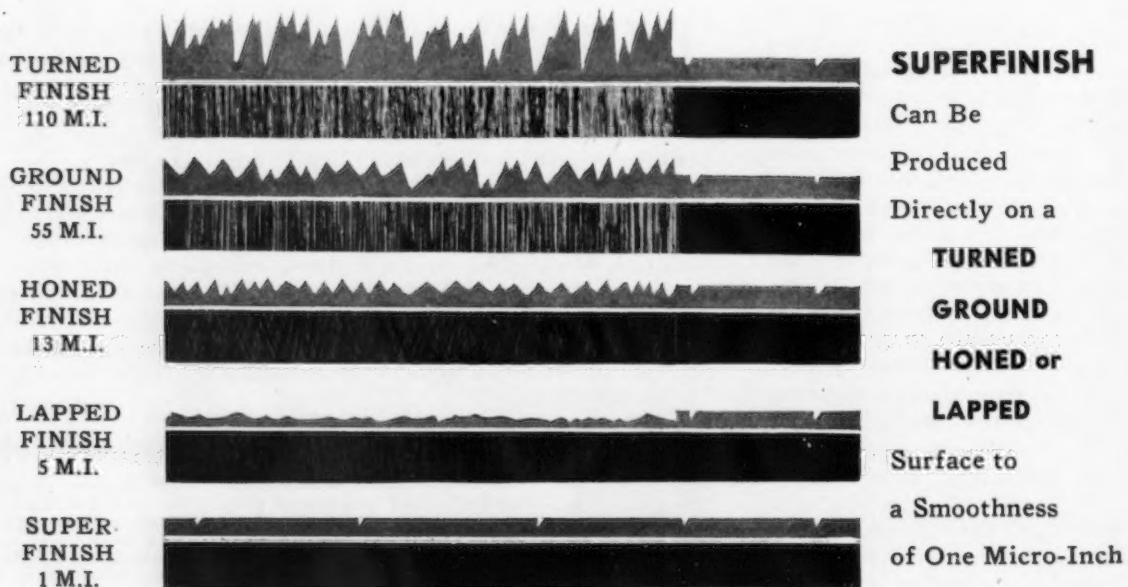


A MECHANICAL METHOD FOR PRODUCING SURFACE FINISHES AT COMMERCIAL AND ECONOMICAL COST TO SMOOTHNESS OF

$\frac{1}{1,000,000}$ INCH

A Superfinish surface can be produced on any material, in any shape, such as external, internal, cam, taper, flat, concave or convex.

MICROGRAPHS OF FINISHES BEFORE AND AFTER **SUPERFINISH**



ONE MICRO-INCH = ONE MILLIONTH INCH.

Superfinishing Machines built under license

FOSTER MACHINE CO., Elkhart, Ind., U.S.A.



SUPERFINISH

- 1st. Eliminates wear.
- 2nd. Removes surface defects which develop fatigue failure in highly stressed parts.
- 3rd. Aids in detection of surface defects which have been produced by previous operations.
- 4th. Allows exact production control of surface finishes in terms of newly adopted Micro-Inches (Millionth Inches).
- 5th. Produces maximum effective bearing area by removing surface irregularities created by present machining methods.
- 6th. Detects and corrects dimensional error.

Superfinishing is the outstanding mechanical development of the year. Many precision parts on 1939 motor cars are now being Superfinished.

Machines are now being designed for many of the country's leading manufacturers for products ranging from watches and razor blades to steel mill rolls and agricultural equipment.

*Inquiries for **SUPERFINISHING** Machines to produce **SUPERFINISHES** should be sent with part prints or sample parts.*

FOSTER MACHINE CO., Elkhart, Ind., U.S.A.

situation. The recent change in the steel pricing policy—the elimination of differentials—slashes in prices and the market outlook are being closely watched to determine the trend of the industry. No comment is offered as to whether the department thinks the prices now are fair or not, though there is an indication that the lower levels are gratifying to the New Deal generally.

The New Deal has persistently criticized steel prices as being both too high and "rigid." Whether or not

officials in charge of the steel study still feel that "rigid" prices are retarding steel markets is not known. It is probably a safe conclusion that some officials do still entertain that view. But on this as on many other issues there undoubtedly are different schools of thought within the Administration which may well presage sharp conflicts among themselves as well as with legislative committee members long before the monopoly inquiry is ended.

One outstanding difference already

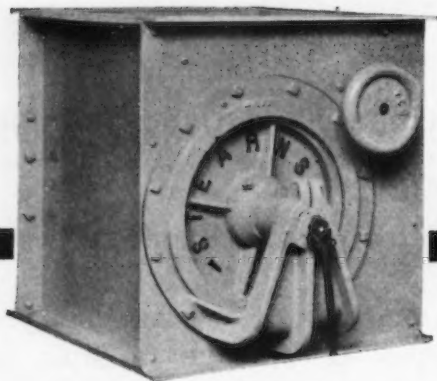
apparent relates to the basing point system in steel—considerably modified by the recent elimination of price differentials. It probably is safe to say that now the predominating view in the Administration, including the Department of Justice, is that sudden abolition of the basing point system would have a highly disruptive effect on the industry, its labor and communities.

FTC Against Basing Points

Mr. Arnold, who thinks the basing point principle is wrong, said that it must nevertheless be recognized that it has been long established and communities built up around it. Yet the Federal Trade Commission has always insisted on complete abolition of the system. There is no reason to think the Commission has changed its policy in the slightest degree. On the contrary it may well be expected it will make a report to the monopoly committee recommending legislation requiring that prices be quoted f.o.b. mill.

The indications are, however, that even some Government sources which heretofore were favorable to tearing up the basing point system root and branch have after more study of the question changed their views and think that if the system is to be done away with it must be by an evolutionary rather than a revolutionary process. And some think this process long has been operating and was considerably stimulated by the recent wiping out of differentials.

CONTINUOUS PRODUCTION and a PURE PRODUCT



A STEARNS Magnetic Separator is your cheapest and best insurance against the deadly and costly menace of tramp iron. The amount of junk removed from raw materials in the course of manufacture is almost unbelievable.

The **STEARNS Type "LS"** shown above, provides fully enclosed, dust-tight, automatic, fast and positive protection at low cost. It is only one of the many designs of better engineered magnetic separators available for protection, purification or concentration in dry or wet application.

Consult the largest, exclusive builders of magnetic equipment with close to forty years of practical pioneering experience. Ask for our catalogs. Outline your problem.

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U. S. War Department Distributes Orders

WASHINGTON.—The War Department has made the following awards: York Safe & Lock Co., York, Pa., mounts for anti-aircraft guns, \$1,557,330; Eclipse Machine Co., Elmira, N. Y., mechanical time fuses, \$1,027,000; Keuffel & Esser, Hoboken, N. J., height finders, \$1,108,800; Bausch & Lomb Optical Co., Rochester, N. Y., height finders, \$239,400; instruments, observation, \$298,705.48; Sperry Corp., Brooklyn, directors, \$1,892,800; Read Machinery Co., York, Pa., mixers, smokeless powder, \$98,890, macerating machines, \$34,420.

F. J. Stokes Machine Co., Philadelphia, presses pelleting, \$25,690; Sharple Brothers Machine Co., Middletown, Ohio, Jordan engines, \$107,670; McKiernan-Terry Corp., New York, cutting machines, types A and B, \$64,

500; Baldwin-Southwark Co., East Eddystone, Pa., smokeless powder presses, dehydrating, type A, \$208,800; A. B. Farquhar Co., Ltd., York, Pa., smokeless powder presses, vertical finishing, \$203,568, smokeless powder presses, blocking, \$140,800, smokeless powder presses, macaroni and finishing, type B, \$161,216; Watson-Stillman Co., Roselle, N. J., smokeless powder presses, macaroni and finishing, type A, \$79,200.

In addition to the awards placed with civilian manufacturers, the Ordnance Department has assigned to the various arsenals requisitions for the manufacture of a considerable number of antiaircraft guns and related equipment.

350 From Outside U. S. To Be At Management Conference

WASHINGTON. — With more than 100 additional delegates coming from abroad, approximately 250 representatives of 30 foreign countries will be here Monday, Sept. 19, to join 2000 American business executives and management experts in inaugurating the Seventh International Management Congress, a triennial event for which American management is serving as host this year for the first time.

Conceived as "a frank and open discussion" of management's relation to current-day and future economic problems, the increasing trend of managerial thought along social lines is reflected by many of the general session address titles. The speakers, and their subjects, include, among others: Lewis H. Brown, president, Johns-Manville Corp., "Management's Aims and Responsibilities"; A. W. Robertson, chairman, Westinghouse Electric & Mfg. Co., "Management's Responsibility to Society"; and Ralph E. Flanders, president, Jones & Lamson Machine Co., "The Balancing of Incentive and Security."

60c Minimum Set for Aircraft Industry

WASHINGTON. — The Walsh-Healey Government Contracts Board last Thursday heard aircraft industry representatives charge at a reconvened hearing that the Board had strayed from its assigned field of fact finding to actual policy making when it recommended a minimum wage of 60c. an hour for workers in the industry.

Leighton Rogers, president of the Aeronautical Chamber of Commerce of America, Inc., testified that the group of productive employees receiving from 17.5c. to 60c. an hour had not been adequately taken into account by the Board and that to establish the recommended minimum of 60c. would be to disregard 25 per cent of the employees in the industry as a whole and from 17 per cent in the engine division to 36 per cent in the industry's instrument division.

Board members, who recommended a national minimum of 60c. for most employees and 40c. an hour for learners or apprentices who could not exceed 15 per cent of the total number of employees in any one plant, indicated at the hearing they were out of sympathy with Mr. Rogers' contention, insisting that all employees in the industry had been considered in determining the prevailing minimum wage on which they based their recommendations.



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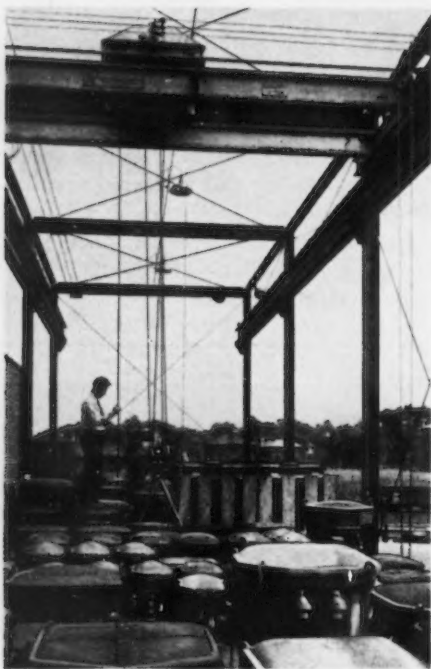
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Continental sheets, both black and coated, have long been favored by users for uniformity of gauge and temper. These sheets are supplied in special-analysis open hearth steel, both commercial and copper-bearing. They are finished in hot rolled, hot rolled annealed, cold rolled; special and uniform blue, pickled, deoxidized, galvanized.

CONTINENTAL STEEL CORP.

General Offices: Kokomo, Indiana
Plants at Canton, Kokomo and Indianapolis



Supporting Assemblies in Electric Furnace Brazing

(CONCLUDED FROM PAGE 33)

side diameter of the shell, made of hard copper wire, which can be sprung in place so that it will be as near the joint as possible. The wire and adjoining steel surfaces should then be daubed with copper-powder paste if the assembly is of fairly large diameter, say, 2 in. or greater. The hardened paste will tend to hold the copper wire in place so that it will not sag away from the joint at the top when it gets hot. The copper paste will serve as an auxiliary supply of brazing metal, and its presence will thus assure having brazing-metal in the joints where it is needed.

Riveting Parts Together

Riveting frequently proves to be an effective means of holding parts together for electric-furnace brazing. The fan-wheel assembly shown in Fig. 28, which has 25 copper-brazed joints and is made up of 14 stampings and one screw-machine part, is an excellent example. This assembly is made by the Chicago Pneumatic Tool Co., Cleveland. The product has always been riveted but is now both riveted and copper brazed. Formerly, the blades riveted to the supporting rings frequently worked loose at the high operating speeds required, necessitating considerable servicing. Now that the assembly is being copper brazed, however, the service failures have been completely eliminated due to the greatly increased strength. This has resulted in worthwhile savings in service costs. All of the 25 joints are copper brazed in one trip through the furnace, making the fan-wheel assembly a solid body, which when struck, rings like a bell.

Assembling and preparing for brazing consists of spot-welding the hub to the disk, pressing the vanes into slots in the disk, assembling a slotted ring over the vanes, and then riveting the vanes into the disk and the ring. Brazing metal is supplied by copper plating the members before assembly and by placing a copper-wire ring around the hub. Typical fan wheels weigh 3 oz. and measure $3\frac{3}{4}$ in. in diameter. They are loaded on wire-mesh trays and charged into a box-type brazing furnace. A single furnace operator can braze over 100 assemblies per hr. When the fan wheels come from the furnace they need no subsequent cleaning, and are therefore ready for the assembly line.

(TO BE CONTINUED)

Armco, Weirton Buy Mills From United

YOUNGSTOWN.—A 72-in. slabbing mill for American Rolling Mill Co. and a 54-in. skin pass mill for Weirton Steel Co. are among recent orders booked by United Engineering & Foundry Co., Pittsburgh.

The slabbing mill which, when completed, is expected to be the largest of its kind, is to be used in conjunction with American Rolling Mill's 80-in. continuous strip mill at Middletown, Ohio.

The single stand skin pass mill for Weirton will be used to roll both strip and sheets and will be similar to the combination skin pass mill furnished by United recently for the Corrigan-McKinney division of Republic Steel Corp.

Management Conference Talks Are Published

INDUSTRIAL MANAGEMENT SOCIETY has published proceedings of its Mid-West Industrial Management Conference, held recently in Chicago, in a 110-page binding which is available for \$1. Among speakers were C. S. Craigmile, vice-president, Belden Mfg. Co., Chicago; Albert Sobey, director, General Motors Institute, Flint, Mich.; Brig. Gen. John V. Clinin; Henry T. Heald, president, Armour Institute of Technology, and George J. Parker, industrial engineer, Carnegie-Illinois Steel Corp., Gary.

C. M. Kemp Mfg. Co. Ships Atmos-Gas Unit to Australia

C. M. Kemp Mfg. Co., Baltimore, has recently shipped to a steel company in Australia a Kemp atmos-gas producer for delivering bright annealing gas at the rate of 8000 cu. ft. per hr. The unit is equipped with automatic air-gas proportioning, with indicating flow meters for fuel gas, combustion air and atmos-gas discharge, with activated alumina dryers for complete dessication of the product.

Boom Boiler Purchases Two Cleveland Plants

BOOM BOILER & WELDING CO., Cleveland, has purchased two plants. One was acquired from the National Cylinder Gas Co. with 19,000 sq. ft. of space. The other plant is that of the Lake Erie Boiler Works, Cleveland.



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... THE NEWS IN BRIEF ...

Long term confidence rises in Detroit as new models make their appearance and men are called back to work . . . Hand-to-mouth buying by motor car makers decreases . . . Plymouth cuts prices \$15 . . . Ford has large inventory of steel.—Page 50.

Trend of steel output in major producing countries.—Page 53.

Three hundred houses to be constructed for Carnegie-Illinois Steel Corp. employees at Clairton, Pa., will take more than three times as much steel as ordinary dwellings.—Page 53.

Interstate Commerce Commission suspends increased rail tariffs on iron and steel products from points in South to points in official classification territory.—Page 54.

"No strike and no pay cut" contracts signed with building trade unions as Federal housing program approaches stage where sponsors claim it will check 11-year lag in construction industry.—Page 54.

Many steel executives will testify in monopoly inquiry.—Page 56.

War Department distributes orders to civilian manufacturers and arsenals for anti-aircraft guns, powder presses, height finders and other equipment.—Page 60.

60 cent minimum an hour for workers in aircraft industry.—Page 61.

Three hundred and fifty delegates from abroad will join 2000 American business men on Monday, Sept. 19, for the Seventh International Management Congress in Washington.—Page 61.

C. M. Kemp Mfg. Co. ships Atmos-Gas unit to Australia.—Page 63.

Management conference proceedings are published.—Page 63.

United Engineering & Foundry Co., Pittsburgh, will build a 72-in. slabbing mill for American Rolling Mill Co. and 54-in. skin pass mill for Weirton Steel Co.—Page 63.

Boom Boiler & Welding Co., Cleveland, buys plants of the Lake Erie Boiler Works and National Cylinder Gas Co.—Page 63.

Finished steel shipments for August of United States Steel Corp. subsidiaries totaled 558,634 tons.—Page 65.

Emergency conditions in Europe intensify War Department's study of equipment mobilization.—Page 65

Wage-Hour Administrator Elmer F. Andrews said this week at Washington that "he may have been in error" when he stated recently that the American Iron and Steel Institute had scheduled him to speak at a forthcoming meeting.—Page 66.

The Bureau of Reclamation awards a railroad bridge contract requiring 5875 tons of steel to American Bridge Co., and a 3817 ton award for reinforcing bars to Bethlehem Steel Co.—Page 66.

Two mine hoists of the largest type the company has yet built have been awarded Nordberg Mfg. Co., Milwaukee, by Homestake Mining Co.—Page 66.

An order for what is said to be the largest shuttle boom and man trolley type bridge ever built for coal and coke handling has been received by Dravo Corp., Pittsburgh.—Page 67.

After seven years delay caused by the depression, work has been resumed on a windowless factory being built for Simonds Saw & Steel Co. at Fitchburg, Mass.—Page 67.

CIO leaders at Pittsburgh act to organize WPA workers into the new United Project Workers union.—Page 68.

Concrete Steel Reinforcing Institute members will discuss marketing problems at their semi-annual meeting Sept. 20-21 at French Lick Springs, Ind.—Page 68.

National Association of Foremen finds shop executive casts deciding vote in purchase of industrial equipment, plans Foremen's Exposition Oct. 14-16 in Akron, Ohio.—Page 68.

Ship pump order to Ingersoll-Rand.—Page 69.

Fan Manufacturers meet Oct. 6-8 at Stockbridge.—Page 69.

Common stockholders of United States Steel Corp. on Aug. 26 totaled 171,705, a gain of 249 since May 31; preferred stockholders numbered 66,213.—Page 69.

TVA awards \$368,500 order for 18 spillway gates to be installed on Tennessee River to Dravo Corp., Pittsburgh.—Page 69.

Wean Engineering Co., Warren, Ohio, organizes a subsidiary, Wean Engineering Co. of Canada, Ltd., to serve Canadian and international customers.—Page 69.

New York Central announces reopening of its idle locomotive and car repair shops and the recall of 3800 employees.—Page 71.

Baldwin Locomotive Works and subsidiary companies received \$3,621,775 of orders in August, \$4,234,568 in July.—Page 94.

Purchasing Agents' Association of Baltimore announces 100 booths have been reserved for its annual Manufacturers' Products Exhibit at Baltimore, Oct. 25-26-27.—Page 94.

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CONVENTIONS

Sept. 15 to 17—American Foundrymen's Association, Ann Arbor, Mich.
Sept. 19 to 23—International Management Congress, Washington.
Sept. 21 to 23—National Industrial Advertisers Association, Cleveland.
Sept. 26 to 30—Association of Iron and Steel Engineers, Cleveland.
Oct. 5 to 7—American Society of Mechanical Engineers, Providence.
Oct. 10 to 14—American Institute of Steel Construction, French Lick Springs, Ind.
Oct. 12 to 14—Porcelain Enamel Institute, University of Illinois, Urbana, Ill.
Oct. 12 to 15—The Electrochemical Society, Rochester, N. Y.
Oct. 13 to 15—Society of Automotive Engineers, aircraft production meeting, Los Angeles.
Oct. 14 to 15—American Society of Tool Engineers, Pittsburgh.
Oct. 17 to 20—American Institute of Mining and Metallurgical Engineers, Detroit.
Oct. 17 to 21—National Metals Congress, Detroit.
Oct. 21 to 22—Industrial Unit Heat Association, French Lick, Ind.

MONTHLY SHIPMENTS OF FINISHED STEEL PRODUCTS BY UNITED STATES STEEL CORP.—TONS

Month	1934		1935		1936		1937		1938	
	Ship-ments	Per Cent of Capacity	Ship-ments	Per Cent of Capacity	Ship-ments	Per Cent of Capacity	Ship-ments	Per Cent of Capacity	Ship-ments	*Per Cent of Capacity
January	331,777	19.8	534,055	31.9	721,414	44.8	1,149,918	75.4	518,322	33.7
February	385,500	25.9	583,137	39.2	676,315	45.3	1,133,724	82.5	474,723	35.5
March	588,209	35.2	668,056	41.5	783,552	50.5	1,414,399	92.7	572,199	37.2
April	643,009	41.5	591,728	36.7	979,907	63.2	1,343,644	91.0	501,972	33.7
May	745,063	44.5	598,915	35.8	984,097	63.4	1,304,039	85.5	465,081	30.2
June	985,337	61.2	578,108	36.7	886,065	57.1	1,268,550	85.8	478,057	32.1
July	369,938	23.9	547,794	34.0	950,851	61.3	1,186,752	77.9	441,570	28.8
August	378,023	22.6	624,497	37.3	921,003	59.6	1,107,858	72.6	558,634	36.3
September	370,306	23.9	614,933	39.7	961,803	62.0	1,047,962	71.1	.....	.....
October	343,962	20.6	636,741	41.1	1,007,417	62.6	792,310	52.0	.....	.....
November	366,119	22.7	681,820	42.3	882,643	59.2	587,241	39.7	.....	.....
December	418,630	27.0	661,515	42.7	1,067,365	68.8	489,070	32.1	.....	.....
Minus yearly adjust-ment	(—19,907)	...	(—23,750)	...	(—40,859)	...	(—77,113)	...	.....	...
Total for year....	5,905,966	30.6	7,347,549	38.1	10,784,273	58.2	12,748,354	70.4	.....	...

*Annual capacity 18,114,000 gross tons, with monthly percentages based on actual number of weeks in each month.

Steel Shipments Climb In August

FINISHED steel shipments for August by subsidiary companies of United States Steel Corp. totaled 558,634 tons, compared with 441,570 tons in July and 1,107,858 tons in August, 1937. Shipments for the first eight months of 1938 reached 4,010,558 tons, compared with 9,908,884 tons in the like period of last year.

Conversation Noisier Than Welding

TESTS made by sound engineers during the construction of the new \$700,000 addition to the Ellis Hospital, Schenectady, N. Y., show that the prevailing noise level in the hospital with the windows closed is less than that created by normal conversation as a result of the use of

electric welding. The sound tests were made by means of a decibel or sound level meter. This instrument provides a microphone pick-up to detect the minute pressure impulses set up in the air by noise. The meter was placed at the bedside of a patient in a room directly adjoining the construction work and the microphone was set up near a window overlooking the workmen.

The results showed the sound level in the room to average 40 decibels. This, according to General Electric engineers, is the same amount of noise existent in the average city residential home, and less than half that of an average city street.

The test was made in mid-afternoon as the girders were being lifted into place outside. It was noted that the decibel readings reached a high level when the patient and nurse were engaged in conversation, indicating the noise of their conversation was greater than structural work outside.

Mobilization of War Equipment Studied

WASHINGTON. — Emergency conditions in Europe are said to be responsible for intensification by the War Department of mobilization plans. While it has reached no conclusions as to whether it will ask the next Congress for all or only part of the sum, the department has set \$142,000,000 as its needs for the purchase of supplies on non-commercial equipment, such as rifles and other material involving steel production.

According to *The Army and Navy Journal*, the program for equipment under a protective mobilization plan could, it is understood, with benefit to industry, as well as to defence, be completed within two years instead of the three or four which would be necessary even under the more ample appropriations granted for the current year.

Stainless Steel Widely Used In New Philadelphia Building

NEW uses for stainless steel are being found, and one of them is for writing desks, two of which have been installed in the lobby of the new building of *The Evening Bulletin*, Philadelphia. The desks were fabricated by the Loeben Ornamental Iron Works, Philadelphia. Enduro stainless steel, product of Republic Steel Corp., was used for the desks as well as for several other applications in the building, including lighting troughs, window grilles, mail box, railing, letter box, letters over outside entrance and other trim.



American Bridge Given \$569,100 Federal Contract

WASHINGTON.—The Bureau of Reclamation has awarded a contract involving 5875 tons of steel to American Bridge Co., at \$569,100 f.o.b. Gary, Ind., for the construction of a Southern Pacific railroad bridge over the Sacramento River in the Central Valley project of California. Seven additional bridges will be awarded in connection with reloca-

tion of the railroad around Shasta dam. One of the bridges, to be 3200 ft. long, will be considerably larger than the one just awarded. The other six will be smaller. Foundations for the bridge were awarded to Clifford A. Dunn, Klamath Falls, Ore., at \$173,000.

The bureau also has awarded 3817 tons of reinforcing bars to the Bethlehem Steel Co., San Francisco, for Grand Coulee Dam on the Columbia

River at \$194,090.88, f.o.b. Odair, Wash., which, when shipped from Seattle, Wash., on a Government bill of lading, is reduced to \$153,641.

U. S. Sanitary Ware Gains in Argentina

WASHINGTON.—A resolution of the Ministry of Finance of Argentina, under the terms of which sanitary articles characterized by their nearly white color, opacity, and coefficient of absorption of less than 0.5 per cent, will be classified by customs authorities of that country as earthenware rather than porcelain, removes one of the chief obstacles to the sale of certain types of American sanitary ware in that market, according to a report to the Department of Commerce from the office of the American commercial attaché, Buenos Aires.

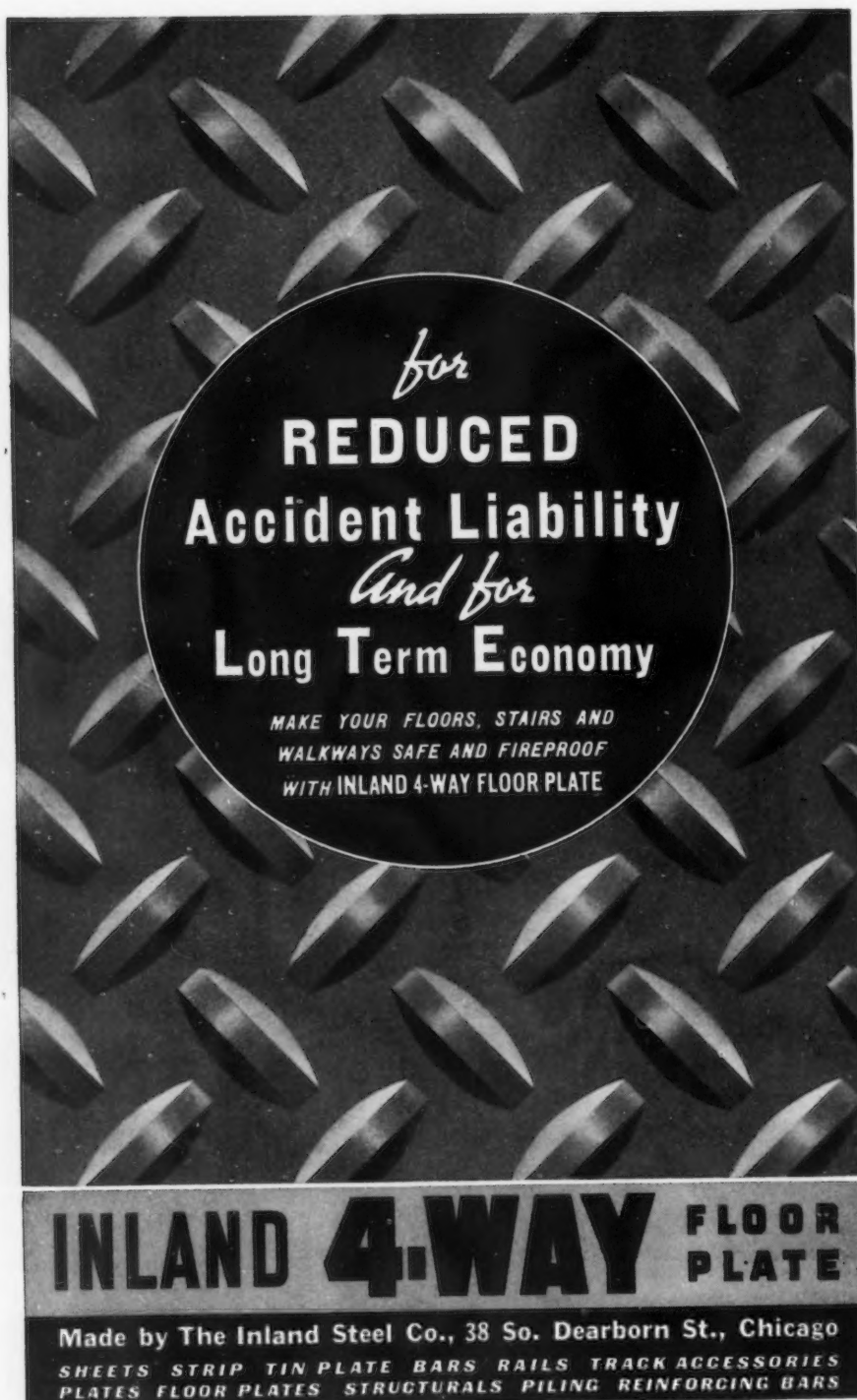
Nordberg Gets Homestake Contract for Mine Hoists

MILWAUKEE.—Nordberg Mfg. Co., Milwaukee, has received an order from the Homestake Mining Co., Lead, S. D., for two mine hoists of the largest type it has yet built. The equipment duplicates two hoists built for the same mine by the Nordberg firm five years ago. One will be used to move miners up and down shafts and the other to lift ore to the surface. The hoists cover a floor space of 56 x 61 ft. each, and the man hoist required 5200 ft. of steel cable, the ore hoist 5400 ft.

Andrews Not Slated As Institute Speaker

WASHINGTON.—Wage-Hour Administrator Elmer F. Andrews said on Monday that he may have been in error when he stated at a recent press conference that the American Iron and Steel Institute had asked him to speak at a forthcoming meeting. After checking on incoming correspondence, attaches in the administrator's office said they could find nothing in their files indicating that the institute had made such a request.

Destiladora de Sonora, S. A., Nogales, Sonora State, Mexico, Ramon Zuniga, president, recently organized, plans large distilling plant on local site, comprising several one and multi-story units, with power house, machine shop and other mechanical divisions. Cost over \$500,000 with equipment.



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SHEETS STRIP TIN PLATE BARS RAILS TRACK ACCESSORIES
PLATES FLOOR PLATES STRUCTURALS PILING REINFORCING BARS

Dravo Coal Bridge Has Man Trolley

PITTSBURGH.—Indicative of the trend in materials handling systems is an order for a modern coal bridge received by Dravo Corp., Pittsburgh, from Kokancoal Co., Inc., Brooklyn. This is said to be the largest shuttle boom and man trolley type bridge ever built for coal and coke handling, and will be used on the Newtown Creek for unloading these commodities from steamers and barges into bins for subsequent dumping into trucks, or on to a storage pile, or from storage pile into bins as may be required.

The employment of a man trolley on this type of equipment is a new feature in bridge crane construction. The trolley rail will be 65 ft. above ground level, and the bridge will have a span between supporting legs of 180 ft. The boom will cantilever 65 ft. over the land-side leg and 90 ft. beyond the water-side leg. A Hayward two-line, power wheel bucket, capable of handling 2.5 tons of coal with each grab, and reaching over the water as much as 65 ft., will be used.

The bridge will travel on a curved runway along the dock for a distance of over 600 ft. To permit this travel, it will be necessary to provide special trucks capable of being driven either simultaneously or independently. The length of bucket travel from barge to bin may be as much as 335 ft., and the rate of bucket travel, combining the movements of both shuttle boom and the man trolley, will attain a speed of 1200 ft. per min. It is estimated that the bridge will have an unloading capacity of about 200 tons per hr.

Work Resumes On Simonds Saw Windowless Factory

DELAYED seven years by the depression, the Simonds Saw & Steel Co.'s decision to proceed immediately with centralization of three multistory fabricating plants in a single five-acre building at Fitchburg, Mass., is bringing activity to what is said to be the first windowless factory built for American industry.

More than a score of engineers are at work on the production layout and detail drawings for hundreds of special foundations, pits and furnaces in the structure which the Austin Co.,

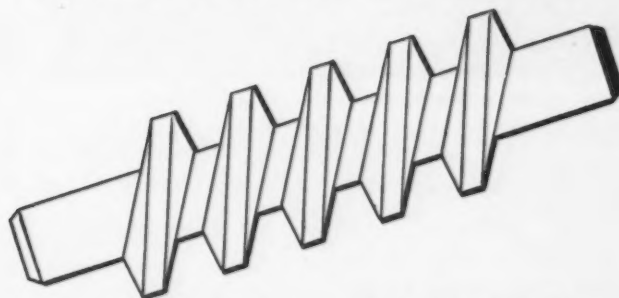
Cleveland, engineers and builders, had almost completed in 1931 when the owners, facing a collapse in capital goods markets, called a halt. Men already busy paving parking areas and drives and pouring concrete for loading platforms and machinery footings at the plant in Fitchburg will soon be joined by several hundreds required to install electrical, water and other service lines, to lay the flooring, and otherwise complete the plant so that machinery can be moved into place.

Koppers Halves Oct. 1 Preferred Dividend

KOPPERS CO., Pittsburgh, has declared a quarterly dividend of 75c. on 6 per cent cumulative preferred stock, payable Oct. 1 to record Sept. 16. The company had been paying \$1.50 each quarter since 1929. Earnings for the first seven months of 1938 were \$1,076,000 less than for the corresponding 1937 period.

Inland Created Ledloy to Save Machining Costs

— It Saved \$47.85 Per Ton on This Part



This case carburized worm shaft for a threshing machine was formerly made of X-1314 steel. Now it's cold finished Inland Ledloy, with reduced machining costs of \$47.85 per ton of steel used.

If your product requires extensive machining operations, why not change to Inland Ledloy? Ledloy has all the desirable physical properties of standard open hearth steel plus remarkable machinability. Write for complete information and case studies showing savings reported by other manufacturers.

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Floor Plates Structurals Piling Rails Track Accessories*



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CIO Acts To Organize Pittsburgh WPA Workers

THE CIO, which has sought to organize steel workers in the Pittsburgh area and elsewhere, this week moved to organize WPA workers into a union to be known as the United Project Workers. An announcement made through the SWOC, the CIO steel union, said the new WPA workers union "has no connection whatever" with the Workers Alliance, which has been frequently described as communistic.

Foremen Plan Exposition In Akron in October

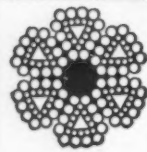
SIGNIFICANT data on factors influencing the sale of industrial equipment are revealed in a survey made by the National Association of Foremen, Dayton, Ohio, in conjunction with its Foremen's Exposition to be held in Akron, Oct. 14, 15, 16. The survey, based on a questionnaire sent to the membership of the association, which includes plant superintendents, works managers, engineers, department heads and purchasing agents, as well as foremen, tends to establish the decisive influence of the shop executive in the purchase of industrial equipment.

"The average shop executive is motor minded," says the association's announcement on the exposition. "He wants to see things at work. He wants to get the 'feel' of the equipment and judge its merits by personal contact."

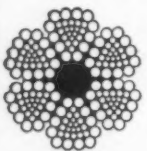
Reinforcing Steel Men To Discuss Marketing

CHICAGO.—Marketing conditions will be the principal topic for discussion at the semi-annual meeting of the Concrete Reinforcing Steel Institute, Sept. 20 and 21, at French Lick Springs, Ind.

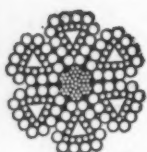
At the opening session responses will be made to the question, "Where is our Industry Headed?" by C. Louis Meyer, president, Ceco Steel Products Corp., Omaha, representing national fabricators; for sectional jobbers, Blair M. Boisseau, president, Virginia Steel Co., Richmond; for the independent sales units, Albert R. Waters, Carter-Waters Corp., Kansas City; for rail steel mills by H. P. Ladd, president, Sweet's Steel Co., Williamsport, Pa., and for the billet mills a speaker yet to be announced.



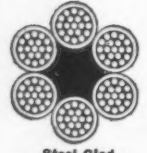
Style B
Flattened Strand



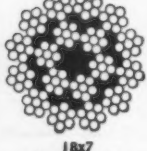
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6x19
Scale



6x27
Extra Flexible



8x19
Extra Flexible

Wean Incorporates Canadian Subsidiary

WEAN ENGINEERING CO., INC., Warren, Ohio, manufacturer of strip steel pickling equipment and other steel mill equipment, announces the recent incorporation of Wean Engineering Co. of Canada, Ltd., to serve Canadian and international customers.

Stockholders Increase For U. S. Steel Corp.

UNITED STATES STEEL CORP. common stockholders of record Aug. 26, 1938, numbered 171,705, an increase of 249 since May 31. Preferred stockholders totaled 66,213 on July 28.

Industrial Unit Heater Group to Meet Oct. 21-22

THE fourth regular meeting of the Industrial Unit Heater Association will be held Oct. 21 and 22 at the French Lick Springs Hotel, French Lick, Ind., when further consideration will be given to the association's standardization program.

Dravo Awarded TVA Order for 19 Gates

A NEW \$368,500 TVA order for 18 spillway gates and one trash gate to be installed in the Chickamauga Dam on the Tennessee River has been awarded to Dravo Corp., Pittsburgh, Pa.

Ship Pump Order to Ingersoll-Rand

INGERSOLL-RAND CO. has been awarded contracts for the condensers, condenser pumps and boiler feed pumps for a third 18,500-ton tanker to be built for the Atlantic Refining Co. at the Sun shipyards, Chester, Pa.

Fan Manufacturers Meet Oct. 6-8 at Stockbridge

THE annual outing meeting of the National Association of Fan Manufacturers will be held on Oct. 6, 7, and 8 at Heaton Hall, Stockbridge, Mass.

IN YOUR INDUSTRY

Roller Chain can be used on short center drives
and at extremely high speeds just as efficiently
as at medium and slow speeds.

BALDWIN-DUCKWORTH CHAIN CORPORATION
SPRINGFIELD AND WORCESTER, MASSACHUSETTS



PARTS LIKE THESE

SMALL STAMPINGS—WIRE FORMS
SPRINGS—VARIOUS TYPES
WASHERS—PLAIN, SPRING, SPECIAL
have solved countless design and manufacturing problems. Let us know what yours is. Design consultant services at your disposal. It will pay you to inquire.

M. D. HUBBARD, PRES.

P. M. HUBBARD

J. A. HUBBARD, SECT.

M. D. Hubbard Spring Company

750 CENTRAL AVE., PONTIAC, MICH.

...OBITUARY...

JAMES P. DALY, traffic official of Republic Steel Corp., Cleveland, and vice-president of the River Terminal Railway Co., a Republic subsidiary, died suddenly Sept. 8, in Buffalo, while attending hearings on a proposed New York ship canal. Born in Weedsport, N. Y., in 1871, Mr. Daly first worked for the New York Cen-

tral Railroad. He entered the employ of the Donner Steel Corp. in 1916 and soon thereafter became traffic manager of the company. Upon formation of Republic Steel Corp., which included the Donner property, in April, 1930, Mr. Daly became a member of the Republic traffic department.

LYLE A. PRESCOTT, vice-president of the Blaw-Knox Division of the

Blaw-Knox Co., Pittsburgh, died Sept. 7, at Pittsburgh. Mr. Prescott, a graduate of Michigan State University, had been connected with the Blaw-Knox Co. since 1917. He was 46 years old.

L. FORD MERRITT, vice-president and sales manager of the Michigan Leather Packing Co., died in his home at Birmingham, Mich., on Sept. 5, aged 46 years.

EDWARD CAPOUCH, contracting manager of the Chicago office of American Bridge Co., died suddenly recently in Chicago, aged 62 years. Educated in the public schools of Chicago, Mr. Capouch started work June 27, 1899, in the engineering department of the American Bridge Works at 40th Street and Princeton Avenue, in Chicago. This concern was later taken in by the American Bridge Co. and Mr. Capouch was transferred to the railroad contracting department of the Chicago office in 1901, having been promoted to contracting manager six years later. He was a member of the Western Society of Engineers and the Chicago Engineers Club.

FRANK R. DECKER, vice-president of H. Boker & Co., Inc., 101 Duane Street, New York, died of a heart attack on Sept. 2, aged 47 years. Mr. Decker joined the organization in 1910 and was an officer and director of the firm for a number of years.

T. EARL COTY, president, Coty Machine Co., Watertown, N. Y., died in a Cleveland hospital recently as a result of an automobile accident near Solon, Ohio. He was 39 years old.

WILLIAM GERHAUSER, a dealer in charcoal and pig iron in Detroit until his retirement in 1920, died in Cleveland on Sept. 6. He was 87 years old. Since his retirement he had lived in Toms River, N. J. He was the father of William H. Gerhauser, president of the American Shipbuilding Co., Cleveland.

WILLIAM LAMOTTE DAY, former president and general manager of the General Motors Truck Co., Pontiac, Mich., and vice-president and director of the General Motors Corp., died

INDUSTRY SPECIFIES KINNEAR ROLLING DOORS

And here's why...

Kinnear Doors coil out of the way above the opening — safe from damage by trucks, wind and elements. And their upward action saves valuable floor and wall space!

Kinnear Doors are ruggedly built of all steel, assuring years of continuous service. They will not sag, warp, or split, and are burglar-proof, vermin-proof, weathertight and fire repellent.

When motor operated, Kinnear Doors can be opened or closed quickly — at the mere touch of a button — from any number of conveniently located control stations. This saves time and labor.

Every Kinnear Door is especially designed and constructed to exactly fit the opening for which it is intended, making installation easy and economical.

Added to this, Kinnear door service is backed by an established, nationwide organization that has specialized in doors for 42 years!

No wonder modern industry demands Kinnear Doors!

Write Today -- for complete information on Kinnear Rolling Doors

The KINNEAR

Manufacturing Company

1760-80 FIELDS AVE.
COLUMBUS OHIO

ROLL UPWARD!
... Saving Space

ALL-STEEL!
... Saving Repairs

ELECTRIFIED!
... Saving Labor

CUSTOM BUILT!
... Saving Problems

Sept. 6, at the hospital at Ann Arbor, Mich. He had been ill several weeks. Mr. Day, who was 75 years old, retired in 1924 after 12 years with G. M. T. C. Born in Moweaqua, Ill., Mr. Day worked in his father's general store, then became a warehouse employee for the John Deere Plow Co., becoming shipping and receiving clerk, later joining a branch of the International Harvester Co. as a sales manager. He served in Kansas City as a manager of the Harvester plant. In 1911 he became general sales manager of the Mitchell Motor Co., in Racine, Wis. He joined General Motors Truck Co. in 1912 and became president in 1915.

♦ ♦ ♦

STRUGIS SPRAGUE (HASSIE) JENKINS, General Motors official internationally known in automotive circles, died on Sept. 5, while on a business trip to Indianapolis, where he was zone manager for the General Motors Truck Co. He was 56 years old.

♦ ♦ ♦

E. LE ROY PELLETIER died Labor Day in Henry Ford Hospital, Detroit, of a heart ailment. Mr. Pelletier was Henry Ford's first advertising manager. Born in Houlton, Me., 72 years ago, he was sent to the Klondike as a newspaper correspondent. After his return he became interested in Polar exploration and invented an air-cooled engine and automobile which he planned to use for part of a trip to the North Pole. He gave up the project and became the manufacturer of the Duquesne car at Jamestown, N. Y., the second air-cooled car to be built in America. In 1906, when Henry Ford was beginning to market his cars, Mr. Pelletier joined Mr. Ford as publicity manager and secretary. He is credited with revolutionizing advertising and publicity work with the methods he used in bringing before the people Mr. Ford's name and facts about the Ford car. In later years Mr. Pelletier served as public relations advisor for Federal bank receivers in Detroit and became associate director of the Federal Housing Administration in Michigan, retiring from that position because of failing health.

New York Central Reopens Repair Shops

THE New York Central System, whose locomotive and car repair shops have been shut down for months, has announced the reopen-

ing of these shops. About 3800 employees were recalled to work.

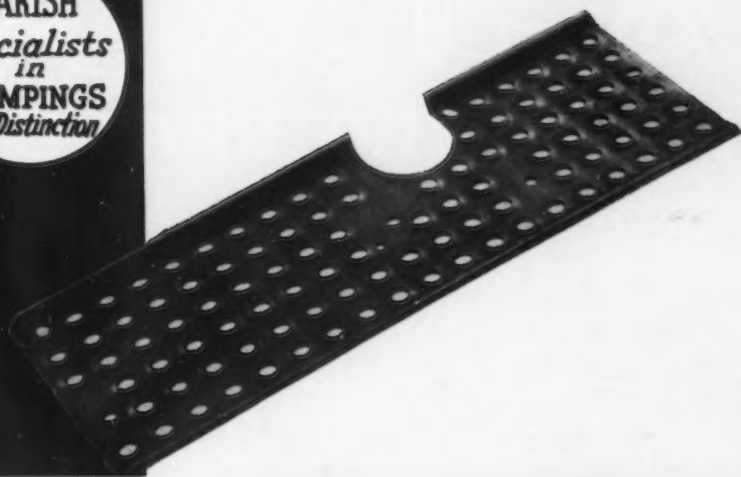
Locomotive shops that have been reopened are those at West Albany, N. Y.; Collinwood, Ohio; Beech Grove, Ind.; Jackson, Mich.; St. Thomas, Ont., and Urbana, Ill. Passenger car shops reopened are those at West Albany, N. Y., and Beech Grove, Ind. Freight car shops to be reopened this week are those at Beech Grove, Ind.; East Buffalo, N. Y., and Avis, Pa.

Orders for materials for the repair

work to be undertaken probably will be placed soon, although some stock is carried over from last year.

Machine Tool Index Advances In August

CLEVELAND.—The machine tool index for August was 120.9 against 89.6 for July and an average of 93.6 for the three months ended August 31, 1938, according to the National Machine Tool Builders' Association.



Safety for the Brakemen

Neither the gauge, size nor specifications of a stamping presents any obstacle to Parish. Skill, experience and equipment combine to make difficult stampings comparatively easy in Parish shops.

This non-skid brake step for box cars is $\frac{1}{4}$ " thick x 30" long x 10" wide. The flange is 1". Embossing around the holes makes the step non-skid. Another of the many types of stampings produced by Parish for many industries.

Have you a problem that could be worked out in pressed metal? Our engineers will do it for you.

PARISH PRESSED STEEL CO., Reading, Pa.

PACIFIC COAST REPRESENTATIVE
F. Somers Peterson Co., 57 California St., San Francisco, Calif.

..PERSONALS..

THOMAS H. BLAIR, for a number of years works manager of the Brooklyn plant of the E. W. Bliss Co., has been made sales manager for the company's Canadian activities, with headquarters in the Commerce and Transport Building, Toronto. He will also handle relations with the London and Paris plants.

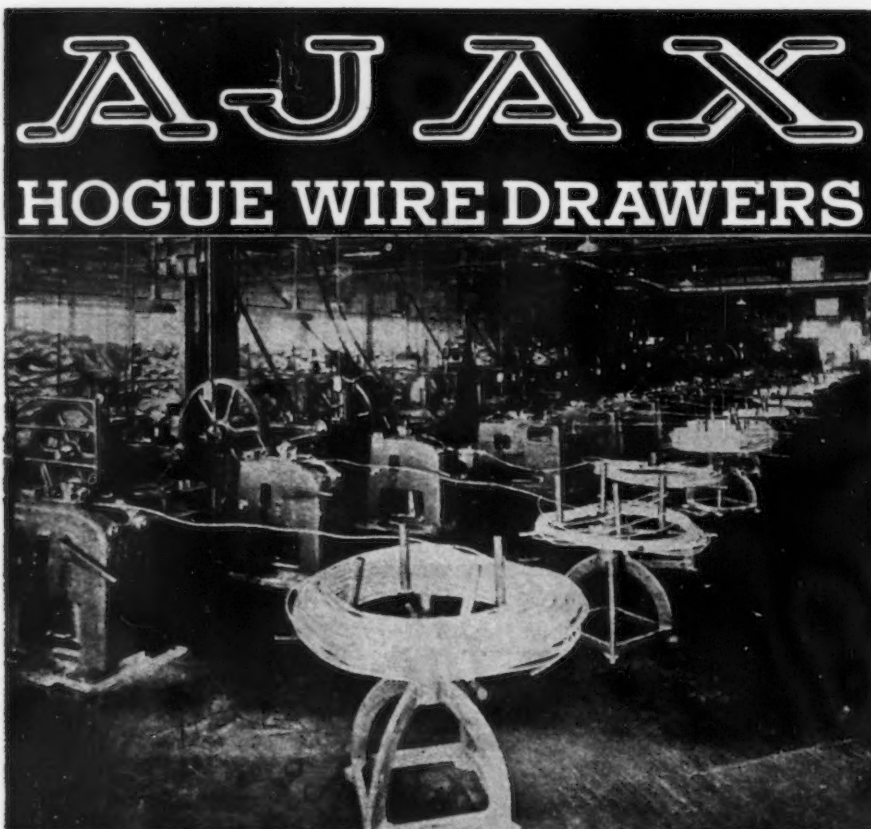
♦ ♦ ♦

J. W. MERIAM, for the past 24 years vice-president and secretary of the

Lincoln Electric Co., Cleveland, has retired from active service, but will remain a director of the Lincoln company. A. F. DAVIS, vice-president, has been elected secretary, and FRANK K. GRIESINGER will handle the company's credits and collections. Mr. Meriam's retirement, at the age of 60, closes a business career which spans the growth and development of the arc welding industry. In 1914 when he joined the Lincoln company, arc welding was still in the experimental stage. The arc welding generator, in



T. H. BLAIR



for PROFITS in COLD HEADING

● A heavy, rigid wire drawing attachment for cold headers, proved by four years actual operation on production in many representative cold heading plants.

Installation on any cold header is simple; the only connection to the header being a roller chain sprocket on the crankshaft. It is not operated from any light auxiliary mechanism of the header. It is easy to set up for different jobs, simple to operate, and does not cause difficulties in gauging.

Straight, accurate, clean and freshly drawn wire contribute to longer header die life and increased operating efficiency. This, together with the savings in cost between cold drawn wire and hot rolled, pickled-and-limed rod, greatly increase profits.

If you operate cold headers you should not fail to investigate these Ajax-Hogue Wire Drawers.

For Further Information, Write for Bulletin No. 111

THE AJAX MANUFACTURING COMPANY

EUCLID BRANCH P. O. CLEVELAND

621 MARQUETTE BLDG., CHICAGO • 201 DEWART BLDG., NEW LONDON

commercially practical form, had just been introduced, and arc welding electrodes were little more than plain wire. Handling a vast amount of detail transactions, Mr. Meriam has seen the company develop from very modest beginnings to its present position in the arc welding industry, with branch offices and agents throughout the United States, factories in England, Canada and Australia, and representation in important centers of the world. For several years he was active in both the Cleveland and the National Association of Credit Men; he was president of the Cleveland association in 1924 and 1925 and a director of the national association in 1925-1926.

♦ ♦ ♦

L. V. BLACK has been appointed superintendent of the electrical department of the Bethlehem plant of the Bethlehem Steel Co., succeeding the late A. J. Standing. Mr. Black was graduated from Penn State in 1914 and immediately became identified with the Bethlehem company, working his way through successive steps to the post of assistant superintendent of the electrical department, the position he held before his recent appointment.

♦ ♦ ♦

FRANK B. WILLIAMS, Jr., heretofore vice-president and sales manager of the Diehl Mfg. Co., the electrical division of the Singer Mfg. Co., Elizabethport, N. J., has resigned to



J. W. MERIAN

become vice-president in charge of the merchandising division of the Westinghouse Electric & Mfg. Co., with headquarters in Mansfield, Ohio. He succeeds ARTHUR E. ALLEN, who has resigned.

♦ ♦ ♦

RICHARD M. WICK has joined the staff of the development and research department of the Bethlehem Steel Co., Bethlehem, Pa. Dr. Wick has been with the National Bureau of Standards since 1929 and for several years has acted as consultant on the protection and surface treatment of metals to the Bureau of Aeronautics, Navy Department.

♦ ♦ ♦

L. T. MCGUIRE has been appointed Pacific Coast manager for the Harnischfeger Corp., Milwaukee, with headquarters in San Francisco. Mr. McGuire formerly was manager of the company's excavator division.

♦ ♦ ♦

WALTER F. BUGENHAGEN has been appointed general sales manager of the Aluminum Goods Mfg. Co., Manitowoc and Two Rivers. He started with the firm as a clerk in 1910 and has served in nearly every department. He fills the vacancy caused by the death of Carl F. Isselman.

♦ ♦ ♦

EDWARD HUTCHENS, president of the Utility Mfg. Co., Cudahy, suburb

of Milwaukee, manufacturing automotive tire machinery as a specialty, has sailed from New York for Europe to embark on a world cruise. He will return in May.

♦ ♦ ♦

FRANK M. DAVIS, president of the Davis & Thompson Co., Milwaukee, manufacturer of special high production milling machines for the automotive and other industries, has returned from a trip to Europe, where

he spent three months in contacting customers and observing business conditions.

♦ ♦ ♦

JAMES A. DOWNEY, JR., safety engineer for the Sloss-Sheffield Steel & Iron Co., is the new president of the Birmingham Safety Engineers Club, succeeding FRANK E. CASH, of the United States Bureau of Mines. J. L. SHORES, of the Alabama Power Co., was elected vice-president. HUBERT

PLAN NOW TO SAVE MONEY In Your Drilling Departments

Write for Bulletin R-21A and see the features that make this High-Speed Super-Service Radial so outstanding in convenience, speed, ease of operation and productivity. Arrange to see one of these machines in operation. It is making money for hundreds of users. To cut overhead rates and production costs this machine should be working for you now.

CINCINNATI BICKFORD

E. MILLS, of the Alabama Mining Institute was reelected secretary-treasurer.

❖ ❖ ❖

H. D. STALNAKER, Pittsburgh scrap broker, has been made vice-president of the M. D. Friedman Co., Ashland, Ky., which maintains yards at Ashland, Ky., and Portsmouth, Ohio. Mr. Stalnaker will represent the company in the Pittsburgh district, with offices in the Grant Building.

❖ ❖ ❖

JACK A. NACHOWITZ, a mechanical engineering graduate of the University of Illinois, has been appointed to a research fellowship of the Battelle Memorial Institute at Ohio State University. He is to make a study of the coloration possibilities of metals and alloys.

❖ ❖ ❖

RALPH J. REICH has been named manager of the Buffalo branch of the hoist and body division of Gar Wood Industries, Inc. Mr. Reich has been with the Buffalo branch as assistant manager. He also has supervision of the Syracuse, Rochester and Buffalo territories.

❖ ❖ ❖

R. B. BARNETT, formerly assistant manager of sales of the Union Drawn Steel Division of Republic Steel Corp., whose appointment as manager of the Buffalo office of Peter A. Frasse & Co. was announced in these columns last week, entered the steel industry in 1914 in the Philadelphia office of the Frasse company. In 1916 he was transferred to Hartford, Conn., when the company opened the Frasse Steel Works. He later was made manager of sales of that division. He became associated with Union Drawn Steel Co., in Beaver Falls, Pa., when the Frasse Steel Works was merged with Union Drawn in 1925. He was made



R. B. BARNETT

assistant to the manager of sales in 1927 and assistant general manager of sales in 1930.

❖ ❖ ❖

....ST. LOUIS....

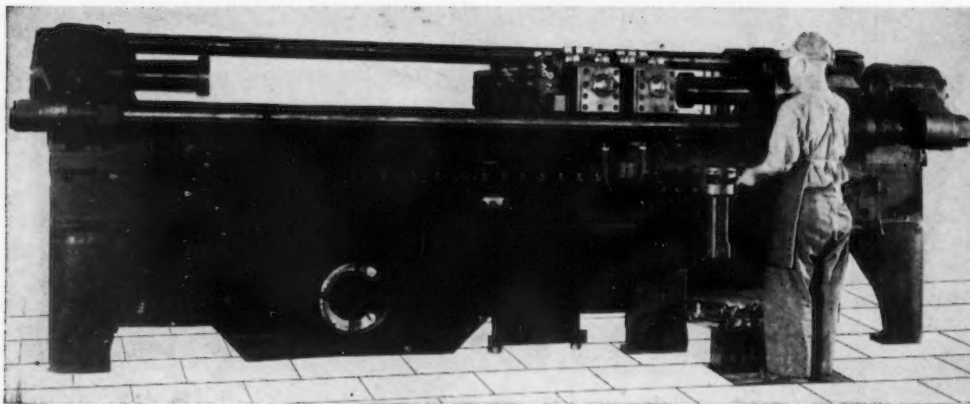
...Steel buying expanding
...Pig iron shipments gain.

ST. LOUIS, Sept. 13.—Purchasing of steel commodities has shown steady expansion since Labor Day. The betterment has been sustained chiefly by miscellaneous users, but requirements are well diversified and make a fair showing in the aggregate. Most orders are for prompt shipment, advance buying of a number of items, including tin plate, being held in abeyance pending announcement of fourth quarter prices.

Lettings of structural steel were confined to small jobs, ranging from 25 to 45 tons. However, outlook is improving steadily with the advancement toward contract stage of numerous public works projects. These projects range from additions to schools to bridges requiring several hundred tons of steel. Oil country goods continue active, with heavy shipments to the new Illinois and Arkansas oil fields. Plates are more active than in a number of months. Silo and tank builders are taking heavier tonnages, and barge builders are inquiring for prices on an aggregate of about 12,000 tons.

Sales from warehouses are holding up well. Plates are the most active item at the moment, with interest manifest particularly in enameling stock and galvanized. Tubular goods are showing about the expected seasonal improvement. The general category of building materials is reported more active than at any time this year. Sales so far this month are about 10 per cent above the total for the similar period in August.

The movement of pig iron to melters has moved steadily upward since Sept. 1, and specifications indicate that total for the month will be well above the rather poor showing of August. The melt also shows steady expansion, both at mills and foundries. Stove makers have stepped up operations, mainly on stock for shipment in the late fall and winter. Jobbing foundries are averaging from three to four days per week, as against two to three days in the early summer. Malleable shops report freer releases on automotive castings. New buying is confined to small, prompt lots. No blast furnace interest purveying to this area has announced fourth quarter price.



A 750 KV A Swift Flash Welder

SWIFT ELECTRIC WELDER CO.

6560 EPWORTH BLVD., DETROIT

Welding machines hand, hydraulic, cam or air operated of the following types: spot, seam, projection, flash, butt, flue and pipe, also gun welding units.

U. S. Again Postpones Steel Wage Action

WASHINGTON—The Walsh-Healey Government Contracts Board further deferred its recommendations for minimum wages in the steel industry this week, presumably because of the question of permitting differentials based on size of plants which is known to be perplexing board members.

Members are believed to have all but abandoned recommending a differential for smaller plants because of an adverse opinion from the Labor Department solicitor. It was understood, however, that they were still concerned over the possibility that differentials based only on a geographic basis would work a hardship on the small mills and there were indications they may follow the course taken in the tobacco industry case.

Under the recommendations in that industry small units are reminded that they have the right under Section Six of the Walsh-Healey Act to petition the board for relief and to request special consideration. The board is known to be reluctant to incorporate such a reminder in its recommendations for industries where wide discrepancies exist between wage rates, but it is understood that in the steel industry it feels that the lowest minimum rates prevailing are relatively high as compared with other industries.

Cracked Casting Salvaged By Use of Bronze-Welding

USE of bronze-welding in salvaging the massive base of a crane employed in unloading sand from river barges is described in the September issue of *Oxy-Acetylene Tips*, published by the Linde Air Products Co., New York. Four cracks, 8 ft. long, appeared in the casting, traversing the webs between the large rectangular openings and extending almost to the edge of the base. The bearing on the underside of the casting showed serious signs of weakness, two seams having opened up on its surface. The average wall thickness of the damaged sections was 3½ in.

By means of another crane, the damaged base was set on its side, and then prepared for bronze-welding by chipping down to clean metal and veeing with an air hammer, making sure that the extreme ends of the cracks were found and prepared. Care-

ful preheating was necessary to prevent unequal expansion in the metal during welding, and consequent extension of the cracks. Since the casting was so large preheating was localized. A tent of asbestos paper was placed over the damaged section, and the slow, even heat of a charcoal fire, shielded by the asbestos, applied for 10 hr.

Actual welding time with two operators was 10 hr. As the weather was cold, the asbestos paper was only

partly removed during the welding operation in order to conserve the heat in the casting, and considerable time was spent in reheating between steps in welding. Approximately 100 lb. of high-strength bronze welding rod was used. The casting was left to cool slowly and evenly under its asbestos tent for 36 hr. It is stated that the repair job was done at a cost of about \$600 to the owners, and that a new casting would have cost approximately \$3,000 at the foundry.



MATERIALS HANDLING EQUIPMENT

- Cleveland Tramrail Hand Propelled Cranes and Carriers for inexpensive but efficient service in warehouse and shop stock room.



- Cleveland Cranes and Carriers carry a

Guaranteed { starting effort 15 pounds
running effort 10 pounds } per ton of total load

ALSO BUILDERS OF



FOR EVERY INDUSTRY

CLEVELAND TRAMRAIL
DIVISION OF
THE CLEVELAND CRANE & ENGINEERING CO.
1115 Depot St.
WICKLIFFE, OHIO

Or consult your phone directory under Cleveland Tramrail.

This Week on the Assembly Line

(CONCLUDED FROM PAGE 52)

At least no Detroiters would be much surprised by the figure. Of course, an inventory like that is big, but it is typical of Ford operations.

In recent months while business has been slack Ford has continued to produce many hundreds of tons of semi-finished steel, stocking up against the time when production will require its use. The semi-finished at the Rouge now, mostly in the form of billets, is estimated conservatively at 150,000

tons, more generously at 200,000 tons. Bars and sheets on hand now amount to about 10,000 tons each.

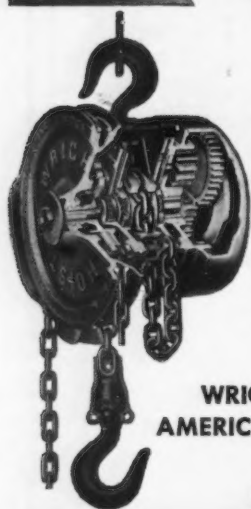
It is a safe guess that these items total nearly \$10,000,000 in value. When the semi-finished is rolled into useable product it might have 25 per cent added to its present value. Besides this, if you add the value of a 100,000 ton scrap heap, you get a rather conservative total of \$13,000,000. In other words, Ford's actual inventory of steel, plus scrap, is at least \$10,000,000, more likely nearer \$15,000,000. This tonnage of steel is not excessive for a Ford inventory; at one ton per car it probably would be

enough for one-quarter of the Ford output next year. However its use will be stretched out over most of the model year and outside sources will supply just about as much steel as usual. Any fears to the contrary are unjustified.

Greer Steel Workers Accept 12½% Pay Cut

CLEVELAND—Officials of Greer Steel Co., Dover, Ohio, announced that operations would be resumed on Wednesday morning, Sept. 14, after settlement of a controversy with union leaders on a 12½ per cent wage reduction. Although a majority of employees favored acceptance of the pay cut and a return to work after the plant had been closed since June 30, a picket line on Sept. 7 prevented the reopening.

At the plant of Reeves Steel Co., in Dover, where the sheet mill has been idle following a request of the company for lower wages, it was announced prospects are favorable that the men may return to work within a short time. The fabricating division of this company has been in operation uninterruptedly.



● When headroom is at a premium and the steps in production are spread over a wide area, the Wright Improved High Speed Hoist is the Right Hoist for the job. ● It has speed. It is easy to operate. The ball bearings supporting the load wheel greatly facilitate lifting. The safety load chain guard, electrically welded special alloy steel load chain, and drop forged hook insure absolute safety. The zinc coated finish reduces depreciation from corrosion. . . . This hoist has twenty-one fine mechanical features that insure efficiency and long life.

WRIGHT MANUFACTURING DIVISION
AMERICAN CHAIN & CABLE COMPANY, INC.
YORK, PENNSYLVANIA

In Business for Your Safety



WRIGHT Improved High Speed **HOISTS**

RAILROAD BUYING

Union Pacific has leased, with option to purchase, 50 box cars from Pullman-Standard Car Mfg. Co.

New York Central is asking for bids on several 600-hp. diesel-electric switching locomotives.

United States Army has ordered 25 tank cars from American Car & Foundry Co.

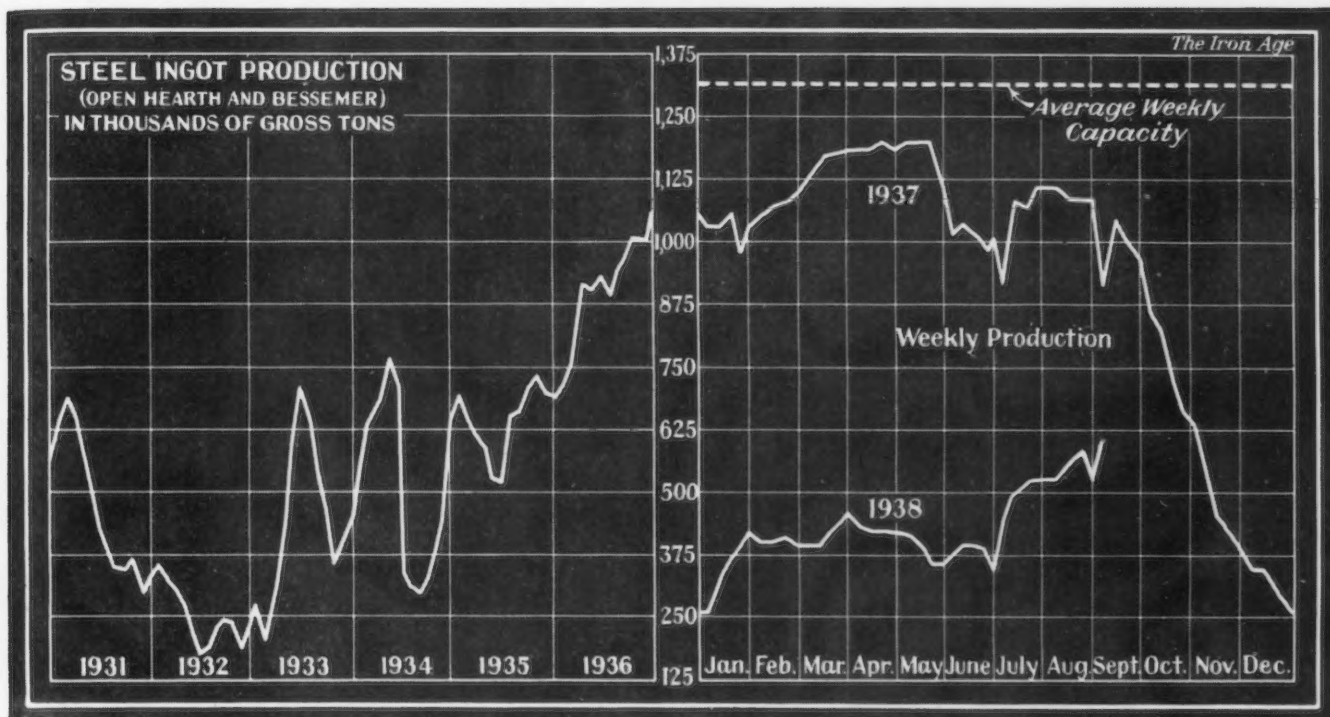
Texas-Mexican Railroad has asked authority for a \$200,000 RFC loan to help finance purchase of seven diesel electric locomotives from Baldwin Locomotive Works. Total cost of the locomotives will be \$418,313.

Richmond, Fredericksburg & Potomac has applied for authority to sell \$740,000 in equipment trust certificates to the First Boston Bank to apply on the purchase of six combined baggage-express cars from the American Car & Foundry Co. at a cost of \$132,524 and six steam locomotives from the Baldwin Locomotive works at \$855,016, the remainder to be paid in cash.

RAILS AND TRACK SUPPLIES

Acme Railroad Construction Co., Cleveland, has been awarded Government contract for 26,000 ft. of 80-lb. rails and 36 switches at Savanna Ordnance Depot, Savanna, Ill. Project is estimated at 1000 tons.

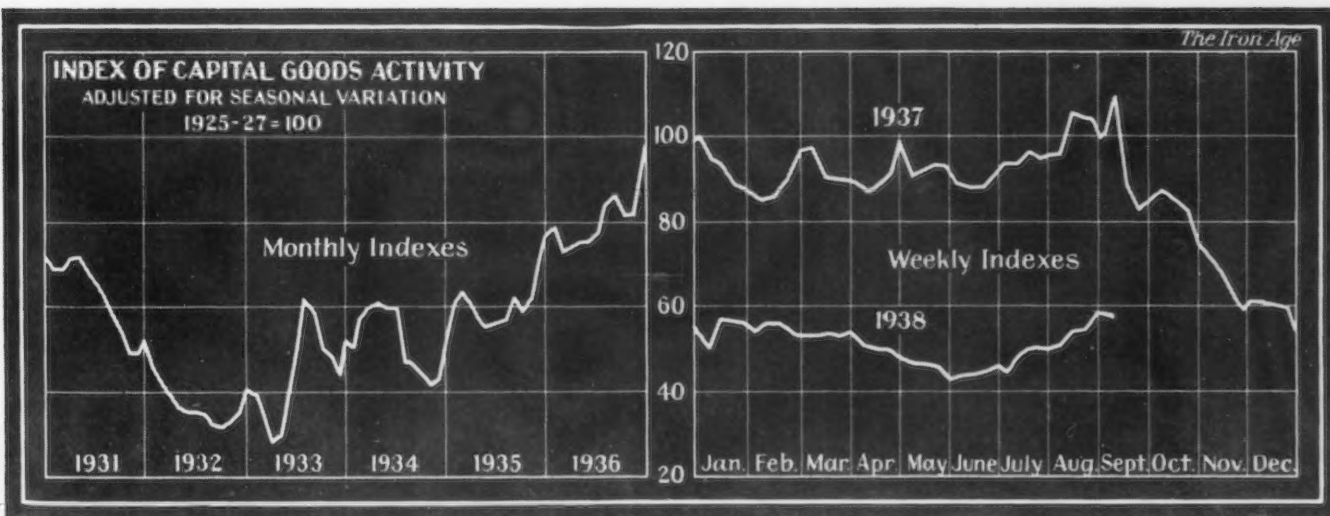
Steel Output Rises to 45½ After Holiday Decline



District Ingot Production, Per Cent of Capacity	CURRENT WEEK..	PREVIOUS WEEK..	Pittsburgh	Chicago	Valleys	Philadelphia	Cleveland	Wheeling	Buffalo	Detroit	Southern	S. Ohio	Western	St. Louis	Eastern	Aggregate
			35.0	42.0	42.0	28.0	49.0	67.0	49.0	52.0	49.0	48.5	40.0	46.5	50.0	45.5
			30.0*	37.0	38.0	24.0	43.0	58.0*	42.0	49.5	36.0	44.6	34.3	40.3	43.0	40.0

* Corrected.

Capital Goods Index Declines 1.5 Points in Holiday Week



THE shutdown of many steel producing units over Labor Day was chiefly responsible for a decline of 1.5 points to 56.9 in THE IRON AGE index for the week of Sept. 10. The gain in the Pittsburgh series, the week's largest, was due to an increase in river traffic which raised the tonnage of river shipments to the highest level since last December. The loss in automobile assemblies in the week was less than the seasonal movement, causing the index of this factor to move up slightly. The weighted monthly index for August was 52.7, as compared with 48 in July. In August, 1937, the monthly index was 102.8, the high point of the 1935-37 recovery movement.

	Week Ended Sept. 10	Week Ended Sept. 3	Comparable Week	
			1937	1929
Steel ingot production ¹	59.0	66.5	101.9	118.8
Automobile production ²	48.9	48.4	90.5	111.4
Construction contracts ³	68.1	68.0	66.8	104.2
Forest products carloadings ⁴	53.7	55.1	66.9	119.7
Production and shipments, Pittsburgh District ⁵	55.0	53.9	103.6	122.6
Combined index.....	56.9	58.4	85.9	115.3

Sources: 1. THE IRON AGE; 2. Ward's Automotive Reports; 3. Engineering News-Record; 4. Association of American Railroads; 5. University of Pittsburgh.

...SUMMARY OF THE WEEK...

... Steel price announcements expected this week or next.

o o o

... Business rising slowly this month; operations at 45.5 per cent.

o o o

... Government program not producing results as quickly as hoped for.

ANNOUNCEMENTS of fourth quarter steel prices probably will be made this week or next. No changes are expected except possibly on tin plate and heavy rails. Pig iron producers generally have made no formal announcements, but some of them will accept business for fourth quarter delivery at current quotations.

Although steel companies are admittedly in need of greater revenues to yield profits, the present volume of buying does not seem to warrant the expectation that a higher price level could be maintained, especially in view of the fact that price irregularities in some areas have become more common. Quantity differentials in particular are being loosely applied.

Meanwhile, the slow rise in new business in the first half of September has been less than was optimistically hoped for, based on the sharper upward curve in July and August. A continuing improvement is expected during the next four to six weeks, but some opinions as to the extent of the rise have been modified owing to factors in which no favorable turn can be looked for in the immediate future.

First of all, it is now recognized that the Government spending program will not bring the results that were expected within the time that was scheduled, namely, before the fall elections. While many contracts have been awarded, the effects are only beginning to filter down to secondary suppliers. Even so, publicly-financed construction projects offer the most assured prospect of improving steel and equipment business.

But aside from Government spending and the still somewhat nebulous prospects of the automobile industry, there is little large tonnage in sight. Railroad buying on a generous scale is still some time in the future, the situation being further complicated by the complete breakdown of wage negotiations. The farm machinery industry is hampered in making production plans by the un-

favorable outlook for purchases owing to low prices for crops, and it appears that fall sales may be no more than sufficient to absorb existing stocks of implements and tractors.

WHILE the automobile industry is expected to turn out at least 500,000 cars before the end of November, much of the steel to be used has not yet been ordered. Rolling of this steel in October may give considerable aid to operations.

A better business psychology has been created in the domestic scene by the success of anti-New Deal candidates in recent voting, but this has been offset to some extent by apprehension over the European situation. Steel export trade is extremely dull both here and abroad, but if danger of a European war continues to be a dominant factor during the next few months, American exports of steel may show an increase owing to fears in neutral areas that the outbreak of hostilities would shut off shipments from Europe. American trade benefited last year when war talk was disturbing world markets.

Steel ingot production has rebounded after the holiday week, being estimated at 45.5 per cent, one and a half points above the pre-holiday week. The Pittsburgh district is at 35 per cent; Chicago at 42 per cent; the Youngstown area at 42 per cent; Wheeling-Weirton, 67; Cleveland-Lorain, 49; Buffalo, 49; Detroit, 52; the South, 49. Bethlehem Steel Co. has blown in a blast furnace at Buffalo, the first increase in active stacks in that area in four months. A Woodward furnace in Alabama is scheduled to resume operations this week, giving that interest 100 per cent production.

THE scrap markets are not following the trend of higher steel operations, mill buying being at a minimum. A few minor grades have shown some weakness, but heavy melting scrap is unchanged in principal centers except at Youngtown, where it is 50c. lower. THE IRON AGE scrap composite price is unchanged at \$14.42.

Structural steel lettings were 17,300 tons, but new projects out for bids totaled only 12,250 tons. Reinforcing steel awards were 7700 tons and inquiries totaled 3600 tons. Public projects accounted for the bulk of the tonnage.

Most important development in the railroad field is the reopening of New York Central car and locomotive repair shops, which will be accompanied by some buying of material. Otherwise railroad activity is still at low ebb.

Tin plate production is no more than 30 per cent as buyers withhold orders pending announcement of a new price to be effective Oct. 1.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

Per Gross Ton:	Sept. 13, 1938	Sept. 7, 1938	Aug. 16, 1938	Sept. 14, *1937
Rails, heavy, at mill	\$42.50	\$42.50	\$42.50	\$42.50
Light rails: Pittsburgh, Chicago, Birmingham	40.00	40.00	40.00	43.00
Rerolling billets: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point	34.00	34.00	34.00	37.00
Sheet bars: Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point	34.00	34.00	34.00	37.00
Slabs: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point	34.00	34.00	34.00	37.00
Forging billets: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham	40.00	40.00	40.00	43.00
Wire rods: Nos. 4 and 5, Pittsburgh, Chicago, Cleveland	43.00	43.00	43.00	47.00
Skelp, grvd. steel: Pittsburgh, Chicago, Youngstown, Coatesville, Sparrows Point, cents per lb.	1.90	1.90	1.90	2.10

Finished Steel

Cents Per Lb.:				
Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham	2.25	2.25	2.25	2.45
Plates: Pittsburgh, Chicago, Gary, Birmingham, Sparrows Point, Cleveland, Youngstown, Coatesville, Claymont	2.10	2.10	2.10	2.25
Structural shapes: Pittsburgh, Chicago, Gary, Buffalo, Bethlehem, Birmingham	2.10	2.10	2.10	2.25
Cold finished bars: Pittsburgh, Buffalo, Cleveland, Chicago, Gary	2.70	2.70	2.70	2.90
Hot rolled strip: Pittsburgh, Chicago, Gary, Cleveland, Middletown, Youngstown, Birmingham	2.15	2.15	2.15	2.40
Cold rolled strip: Pittsburgh, Cleveland, Youngstown	2.95	2.95	2.95	3.20
Sheets, galv., No. 24: Pittsburgh, Gary, Sparrows Point, Buffalo, Middletown, Youngstown, Birmingham	3.50	3.50	3.50	3.80
Hot rolled sheets: Pittsburgh, Gary, Birmingham, Buffalo, Sparrows Point, Cleveland, Youngstown, Middletown	2.15	2.15	2.15	2.40
Cold rolled sheets: Pittsburgh, Gary, Buffalo, Youngstown, Cleveland, Middletown	3.20	3.20	3.20	3.55

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Cents Per Lb.:	Sept. 13, 1938	Sept. 7, 1938	Aug. 16, 1938	Sept. 14, *1937
Wire nails: Pittsburgh, Chicago, Cleveland, Birmingham	2.45	2.45	2.45	2.75
Plain wire: Pittsburgh, Chicago, Cleveland, Birmingham	2.60	2.60	2.60	2.90
Barbed wire, galv.: Pittsburgh, Chicago, Cleveland, Birmingham	3.20	3.20	3.20	3.40
Tin plate, 100-lb. base box: Pittsburgh and Gary	\$5.35	\$5.35	\$5.35	\$5.35

*Pittsburgh prices only.

Pig Iron

Per Gross Ton:				
No. 2 fdy., Philadelphia	\$21.84	\$21.84	\$21.84	\$25.76
No. 2, Valley furnace	20.00	20.00	20.00	24.00
No. 2, Southern Cn'tl.	20.06	20.06	20.06	23.69
No. 2, Birmingham	16.38	16.38	16.38	20.38
No. 2, foundry, Chicago	20.00	20.00	20.00	24.00
Basic, del'd eastern Pa.	21.34	21.34	21.34	25.26
Basic, Valley furnace	19.50	19.50	19.50	23.50
Malleable, Chicago	20.00	20.00	20.00	24.00
Malleable, Valley	20.00	20.00	20.00	24.00
L. S. charcoal, Chicago	28.34	28.34	28.34	30.04
Ferromanganese, seab'd, carlots	92.50	92.50	92.50	102.50

†The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Scrap

Per Gross Ton:				
Heavy melting steel, P'gh.	\$15.25	\$15.25	\$15.25	\$20.75
Heavy melting steel, Phila.	14.25	14.25	14.25	19.25
Heavy melting steel, Ch'go.	13.75	13.75	13.75	18.00
Carwheels, Chicago	14.25	14.25	14.25	19.25
Carwheels, Philadelphia	17.25	17.25	17.25	20.75
No. 1 cast, Pittsburgh	15.50	15.25	15.25	19.75
No. 1 cast, Philadelphia	16.25	16.25	16.25	20.25
No. 1 cast, Ch'go (net ton)	13.25	13.25	13.25	14.75
No. 1 R.R. wrot., Phila.	15.25	15.25	15.25	20.75

Coke, Connellsville

Per Net Ton at Ovens:				
Furnace coke, prompt	\$3.75	\$3.75	\$3.75	\$4.25
Foundry coke, prompt	4.75	4.75	4.75	5.00

Non-Ferrous Metals

Cents per Lb. to Large Buyers:				
Electrolytic copper, Conn.	10.125	10.125	10.125	14.00
Lake copper, New York	10.25	10.25	10.25	14.12½
Tin (Straits), New York	42.75	42.75	42.875	59.75
Zinc, East St. Louis	4.75	4.75	4.75	7.25
Zinc, New York	5.14	5.14	5.14	7.60
Lead, St. Louis	4.75	4.75	4.75	6.35
Lead, New York	4.90	4.90	4.90	6.50
Antimony (Asiatic), N. Y.	14.00	14.00	14.00	18.25

The Iron Age Composite Prices

September 13, 1938
One week ago
One month ago
One year ago

Finished Steel

2.300c. a Lb.
2.300c.
2.300c.
2.512c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.

	HIGH	LOW		HIGH	LOW
1938	2.512c., May 17	2.300c., July 6			
1937	2.512c., Mar. 9	2.249c., Jan. 4			
1936	2.249c., Dec. 28	2.016c., Mar. 10			
1935	2.062c., Oct. 1	2.056c., Jan. 8			
1934	2.118c., Apr. 24	1.945c., Jan. 2			
1933	1.953c., Oct. 3	1.792c., May 2			
1932	1.915c., Sept. 6	1.870c., Mar. 15			
1931	1.981c., Jan. 13	1.883c., Dec. 29			
1930	2.192c., Jan. 7	1.962c., Dec. 9			
1929	2.223c., Apr. 2	2.192c., Oct. 29			
1928	2.192c., Dec. 11	2.142c., July 10			
1927	2.402c., Jan. 4	2.212c., Nov. 1			

Pig Iron

\$19.61 a Gross Ton
19.61
19.61
23.25

Based on average basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

	HIGH	LOW		HIGH	LOW
\$23.25, June 21	\$19.61, July 6				
23.25, Mar. 9	20.25, Feb. 16				
19.73, Nov. 24	18.73, Aug. 11				
18.84, Nov. 5	17.83, May 14				
17.90, May 1	16.90, Jan. 27				
16.90, Dec. 5	13.56, Jan. 3				
14.81, Jan. 5	13.56, Dec. 6				
15.90, Jan. 6	14.79, Dec. 15				
18.21, Jan. 7	15.90, Dec. 16				
18.71, May 14	18.21, Dec. 17				
18.59, Nov. 27	17.04, July 24				
19.71, Jan. 4	17.54, Nov. 1				

Steel Scrap

\$14.42 a Gross Ton
14.42
14.41
19.33

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	HIGH	LOW		HIGH	LOW
\$14.83, Aug. 9	\$11.00, June 7				
21.92, Mar. 30	12.92, Nov. 16				
17.75, Dec. 21	12.67, June 9				
13.42, Dec. 10	10.33, Apr. 23				
13.00, Mar. 13	9.50, Sept. 25				
12.25, Aug. 8	6.75, Jan. 3				
8.50, Jan. 12	6.43, July 5				
11.33, Jan. 6	8.50, Dec. 29				
15.00, Feb. 18	11.25, Dec. 9				
17.58, Jan. 29	14.08, Dec. 3				
16.50, Dec. 31	13.08, July 2				
15.25, Jan. 17	13.08, Nov. 22				

...PITTSBURGH...

... Announcement of fourth quarter steel prices expected this week or next ... New business shows slow, steady improvement ... Ingot output rebounds after holiday week.

PITTSBURGH, Sept. 13.—Fourth quarter price announcements will probably be made some time this week or next. Current quotations on major steel products are expected to be reaffirmed but adjustments in tin plate and standard rail prices are anticipated. These latter items were not reduced when prices were slashed last July.

Incoming business, while not showing the same activity as a month and a half ago, reflects a slow but steady improvement. Steel ingot output in the Pittsburgh district has bounded up five points to 35 per cent of capacity, although last week's production was influenced to some extent by holiday shutdowns. The Wheeling-Weirton district has advanced nine points to 67 per cent.

Prices generally are firm except for a few items such as galvanized sheets which appear to be perennially weak and have little or no effect on the price structure of other products. Some irregularity in the application of quantity discounts has been prevalent recently.

Pig Iron

New business is coming in at about the same rate as a month ago. Prices for fourth quarter delivery are expected to be the same as current quotations. Some producers are willing to book business at this time for delivery later in the year with no change in prices.

Semi-Finished Steel

Continuing to reflect a relatively heavy semi-finished steel demand, total specifications in the past week were

a shade larger. Orders are for immediate shipment and consumption, there being no incentive for forward buying as third quarter prices are expected to be reaffirmed for fourth quarter delivery.

Bars, Plates and Shapes

Aided by some automotive business, hot rolled bar demand increased moderately during the past week and orders so far this month are running ahead of the comparative period last month. Diversification is increasing but individual orders remain small and present production difficulties in many cases. Structural inquiries and awards were fairly light in the past week, both in number and tonnage involved. Plate and shape specifications to the mills are holding up fairly well but orders last week were about 10 per cent below the previous week. Current quotations are expected to be reaffirmed soon for fourth quarter delivery.

Reinforcing Bars

Truscon Steel Co., Youngstown, will furnish 650 tons of bars for a dam at Binghamton, N. Y. Awards were fairly numerous in the past week but tonnages were not large and the same may be said for new projects. Specifications to the mills are moderately heavy and future prospects continue bright. Meanwhile, prices are somewhat firmer than a month ago.

Cold Finished Bars

Cold finished bar demand has expanded some in the past few weeks, due mostly to automotive specifications. Miscellaneous jobber require-

ments are slightly larger in number but total tonnages involved are still far from satisfactory.

Wire

The rate of incoming business so far this month exhibits the same brisk rate of activity that has existed for the past several weeks. Manufacturers' wire demand has improved further, due to automobile parts makers' requirements. Seasonal factors are responsible for a moderate gain in merchant wire products. Consumers' inventories continue to be at rock bottom and in some cases, actually non-existent. No change in present prices is anticipated for fourth quarter delivery.

Tin Plate

Consumers are still awaiting the new tin plate price announcement and, as a result, operations for the country as a whole are no better than 30 per cent. Inventories have been cut to the bone and during the past week a very slight increase in demand emanated from some general line can makers.

Tubular Goods

The uncertainty surrounding oil prices has had some dampening effect on oil-country goods demand recently, but in the past week or so specifications have shown a tendency to increase. Meanwhile, some steel producers are balancing out mill stocks.

Sheets and Strip

Although total sheet specifications are no heavier than a week ago, diversification has expanded somewhat. Producers expect much needed support soon from the automotive industry. Hot and cold rolled sheet prices are firm and the "jitteriness" which started over a month and a half ago has about become dissipated. Galvanized sheet prices, on the other hand, continue to reflect a perennial weakness which seems to always accompany this product. Meanwhile, fourth quarter price announcements, which are expected to be a reaffirmation of current quotations, will probably be made this week or next.

Weekly Booking of Construction Steel

	Week Ended			Year to Date	
	Sept. 13, 1938	Sept. 7, 1938	Aug. 16, 1938	Sept. 14, 1937	1938 1937
Fabricated structural steel awards	17,300	26,510	10,500	19,120	536,130 834,185
Fabricated plate awards	470	120	5,120	1,215	95,920 89,650
Steel sheet piling awards	0	3,000	275	590	33,910 36,815
Reinforcing bar awards	7,700	9,520	4,415	6,970	216,005 203,345
Total Letting of Construction Steel	25,470	39,150	20,310	27,895	881,965 1,163,995

... CHICAGO ...

... Steel tonnage this month fails to expand as much as had been hoped for ... However, ingot output is at 42 per cent, new high for the year ... Farm implement and tractor outlook dubious.

CHICAGO, Sept. 13.—As predicted last week, renewed activity following Labor Day has enabled district mills this week to exceed the 40 per cent rate of the period preceding the holiday, a gain of two points to 42 per cent of capacity being attained. This figure represents an advance of five points over last week and is a new high for the year.

A note of disappointment is apparent in this district, due probably to the failure of specifications from all sources to expand as rapidly after Labor Day as opinion indicated they might.

There seems little doubt that considerable additional steel must be bought by the motor car makers. The delayed placing of this business apparently is responsible for much of the blue feeling here, as well as the opinion that advance estimates were perhaps too rosy. One seller believes over half a million cars will be needed by Nov. 15, however, which program assures some fair buying.

The farm equipment situation is no better and until crop prices increase it may be that rural purchases will not be sufficient to much more than deplete current stocks of finished tractors and implements. The cheapest combine yet marketed, \$345, is expected to be a big item with Allis-Chalmers. The new Graham-Paige tractor is being greeted favorably.

Pig Iron

The drop in shipments occasioned by Labor Day already has been made up and the month to date is slightly ahead of August's corresponding period. Depletion of producers' inventories continues, and there is no proportional rise in consumer stocks, indicating iron is going into use as soon as received.

Wire and Wire Products

Though the upturn in merchant products is not expected until Oct. 1 or so, a gradual rise in manufacturing wire specifications is being seen. Automobile accounts and miscellaneous industrial plants are mostly responsible for this improvement. Con-

sumer inventories are low, according to leading producers, and unless stocks are built up moderately now, it is believed that a good period of buying will result in considerable delay and confusion at the mills.

Structural Shapes, Plates and Reinforcing Bars

Construction activity is not so great this week, though two large housing projects were in the news over the week-end, and will be requiring various types of steel during the fall months, especially reinforcing steel. Small jobs are dominant, with Michigan and Wisconsin being particularly active. The 1000 cars for the Illinois Central will be built by

American Car & Foundry Co., which also will make 25 tank cars for the Army. Union Pacific has ordered 50 lightweight box cars from Pullman-Standard. A large tank builder here is down to three days a week for the first time in many months.

Warehouse Business

About the middle of August a general upturn was experienced, which was held throughout the month, making the entire period slightly better than any other month of the year. Demand continues on a broad scale for nearly all products, this being regarded as a healthy condition.

Sheets and Strip

Automobile tonnage is not coming in particularly well yet, but gradually increasing specifications are looked for throughout this month and next. It has been estimated that between 500,000 and 600,000 cars will be necessary by mid-November. Inventories of general consumers still are at a minimum, and any large or sudden demand for steel will probably affect operations immediately.

REINFORCING STEEL

NORTH ATLANTIC STATES AWARDS

- 650 Tons, Binghamton, N. Y., Whitney Point dam, U. S. Engineers, to Truscon Steel Co., Youngstown, through Hunkin-Conkey Construction Co., Cleveland, contractor.
- 250 Tons, Pittsfield, N. H., dam, to an unnamed bidder.
- 200 Tons, Bath, N. Y., barrack building No. 78, Veterans' Hospital, to Bethlehem Steel Co., Bethlehem, Pa., through Spence Bros., Detroit, contractors.
- 200 Tons, Fort Dupont, Del., barracks building, to Taylor-Davis, Inc., Philadelphia, through J. A. Bader & Co., Wilmington, Del., contractor.
- 150 Tons, New York, Treasury Department supply requirements, to W. Ames & Co., Jersey City.
- 150 Tons, State of New Jersey, highway widening project, route 26, to Truscon Steel Co., New York.
- 136 Tons, Medford, Mass., high school addition, to Morrison-Stevens Co., Boston, through D'Armore Construction Co., Boston, general contractor.
- 130 Tons, Harrison, N. J., highway project, to Truscon Steel Co., New York.
- 125 Tons, Erie County, N. Y., mesh, highway project RC-3975, to Wickwire Spencer Steel Co., New York, through Depew Paving Co., Depew, N. Y.
- 100 Tons, Kittery, Me., Badger Island bridge, to Bancroft & Martin Rolling Mills, Portland, Me., through Ellis C. Snodgrass, Portland, contractor.

CENTRAL AND WESTERN STATES

- 3817 Tons, Odair, Wash., Grand Coulee Dam, to Bethlehem Steel Co., Seattle.
- 580 Tons, Chicago, Austin Avenue improvement, to Bethlehem Steel Co., through O. J. Dean, Chicago; Ready Coal & Construction Co., contractor.

- 430 Tons, Chicago, bridge, North Avenue and Outer Drive, State Procurement Office, to Joseph T. Ryerson & Son, Inc., Chicago.
- 250 Tons, Hastings, Neb., Central Nebraska Power & Irrigation works, group 15A, to Colorado Fuel & Iron Co., Denver; Western Asphalt Construction Co., contractor.
- 150 Tons, Lady Grass, Mont., Indian Irrigation service, to Youngstown Sheet & Tube Co., Youngstown, through Hustad Co., Minneapolis (no contractor).
- 150 Tons, Coldwater, Mich., children's village, to Ceco Steel Products Co., Omaha.
- 130 Tons, Fort Brady, Mich., barracks, to Truscon Steel Co., Youngstown.
- 100 Tons, Wichita, Kan., Sears-Roebuck Co. building, to Sheffield Steel Corp., Kansas City, through Hahner & Foreman, contractors.

NEW REINFORCING BAR PROJECTS

NORTH ATLANTIC STATES

- 792 Tons, Queens, N. Y., elevated highway and approaches, 45th to 64th Streets, Elmhurst Contracting Co., Inc., Queens, N. Y., low bidder.
- 500 Tons, Woodbridge, N. J., Pennsylvania Railroad grade crossing elimination.
- 200 Tons, Providence, R. I., parcel post unit.
- 110 Tons, Melrose, N. Y., mesh, highway project R. C. 3985, Sheehan Contracting Corp., Albany, N. Y., low bidder.

CENTRAL AND WESTERN STATES

- 1618 Tons, Tacoma, Wash., Narrows Bridge; bids Sept. 27.
- 475 Tons, Traverse City, Mich., tuberculosis hospital.
- 350 Tons, Fort Sheridan, Ill., barracks.
- 289 Tons, Columbus, Ohio, Treasury Procurement Office, Invitation 67142-4; Builders Structural Steel Co., Cleveland, low bidder.
- 225 Tons, Indianapolis, Fort Benjamin Harrison.
- 200 Tons, Crawfordsville, Ind., sewage plant.
- 175 Tons, Melcher, Iowa, railroad bridge.
- 100 Tons, Purdy, Iowa, railroad bridge.

CANADA

... Dominion looks for fall business revival.

TORONTO, Sept. 13.—With the summer holiday season at an end, industrial leaders are giving more attention to business and several interviewed during the week expressed the opinion that there is every possibility for a substantial pick-up in the immediate future. At the Canadian National Exhibition, which closed on Saturday, general improvement in demand for machinery, tools and implements was reported and sales at the big show compared favorably with those of a year ago and were much better than expected.

The automotive industry soon will be under way on 1939 cars, and heavy buying of materials will originate from this source. Building trades have not reached the strides predicted earlier in the year, but sales of structural steel and reinforcing bars have been steady and fabricators have been successful in keeping plants on an operating basis of about 50 per cent. A number of new contracts are pending with orders involving some 5000 tons overhanging the market in lots ranging from 100 to 2000 tons. The agricultural implement industry is maintaining operations around 60 per cent, and officials of the various companies report substantial betterment in sales both to Eastern and Western Canada points. The mining industry in turn is beginning to show improvement despite the fact that financing has been slow for upwards of a year. Several companies have announced plans for new mills and considerable equipment is being purchased for new mine prospects.

Local blast furnace representatives state that books for last quarter contracts will open within the next week or 10 days and they look for forward delivery booking to equal that of earlier quarters this year. Current demand for pig iron, however, is for spot delivery and sales are in lots of 50 to 400 tons. Before Great Lakes' navigation closes there will be a number of large shipments of iron to melters who are in a position to take advantage of the low freight rates. This business will have a stimulating effect on sales during the next six weeks or two months. As soon as navigation closes on the Lakes, producers of pig iron will withdraw the summer price schedules and again

quote iron on a Toronto base price plus freight.

Trading in iron and steel scrap is showing slow but steady improvement. Local dealers state that there is a persistent demand for heavy melting steel, machinery cast and stove plate. Whenever malleable scrap is available there is a waiting demand, but local dealers state the only supplies coming in are in small quantities but there are hopes that the railroads will have a supply to offer soon. Railroad scrap is expected in fairly large quantity on the market this year, but as in the past this will be taken directly by the mills. Scrap prices are showing some firmness in a few grades and it is understood that some dealers are paying above list for heavy melting steel and machinery cast.

..SAN FRANCISCO..

... Projects requiring 25,000 tons of steel pending on Pacific Coast.

SAN FRANCISCO, Sept. 10.—In a market with few awards due to two legal holidays in California, bid calls that may aggregate more than 25,000 tons of steel created the chief interest of the week on the Pacific Coast. Sept. 27 was named the new opening date for bids on the Tacoma, Wash., Narrows Bridge, which calls for 17,500 tons of steel. Previous bids on this suspension type structure were returned unopened Sept. 2, and certain changes in foundation design have been made.

Bids are asked by Oct. 4 by the Metropolitan Water District, Los Angeles, for constructing the remaining 13.5 miles of the Palos Verdes Feeder of the Colorado River aqueduct. Alternate specifications call for 51-in. welded steel pipe or 50-in. lock-joint steel cylinder reinforced precast concrete pipe. Steel pipe was selected for the first section of this aqueduct about a year ago. No tonnage take-offs yet have been made locally, but the new project may take 8000 tons if steel pipe is chosen.

Bethlehem Steel Co. was awarded two buildings at the Bremerton, Wash., Navy yard, requiring 757 tons of shapes, and an underpass at Maplewood, Wash., involving 302 tons of shapes.

...CINCINNATI...

... Sheet demand at steady level ... Automotive use increases.

CINCINNATI, Sept. 13.—Post-holiday sheet demand is adhering to levels previously attained. Moderate shifting in quantities from various industries is indicated, automobile interests tending to increase as new model production nears. Miscellaneous demand shows no soft tendency while the galvanized ordering is steadily active. The feeling is strong that present quotations will be affirmed for the next quarter.

For the second week, steel production has gone downward, the current drop being about six points to just under the half-way level. This is not alarming, however, since ingot output has been pegged heretofore to permit replenishing of inventories. Having reached a place near desired inventory level, furnace interests have cut total open hearths to 16 out of 33.

The pig iron market is featureless. No tonnage orders are reported in the week's sales which were entirely to cover current needs. Shipments, however, are moving fairly well.

LATE PERSONALS

WILLIAM A. WATSON, who has been identified with the refractories industry for the past 20 years, has been appointed general sales manager, with offices in the Oliver Building, Pittsburgh, of the National Refractories Co., Philadelphia. In his new activities he plans to devote most of his time to the Pittsburgh-Cleveland-Detroit area. The Midwest Refractories Co., Cleveland, of which Mr. Watson has been president, will continue to function in the sale of products non-competitive with those manufactured by the National Refractories Co.

♦ ♦ ♦

E. G. MANSFIELD, formerly vice-president and treasurer of Samuel C. Rogers & Co., Buffalo, makers of automatic knife and saw grinding machinery, has been elected president. He has been actively identified with the business for 25 years. He succeeds Oliver Cabana, Jr., who died early this year.

... CLEVELAND ...

... Ingot output at 49 per cent in Cleveland-Lorain area and at 42 per cent in Valleys ... A slow rise in business over next four to six weeks is expected.

CLEVELAND, Sept. 13.—Ingot output has recovered four points to 42 per cent in the Valleys district after the holiday interruption and is up six points to 49 per cent in the Cleveland-Lorain area this week with an additional blast furnace in production in the latter district.

Barring Unforeseen developments, steel makers here believe a slow rise will take place over the next four to six weeks.

Flat rolled products are slow to emerge from the slump which started shortly before Labor Day. Orders are lower than in the early part of August when covering was heavy. Slight gains are shown in merchant bars, plates, sheet bars and manufacturers' wire so far this month.

Settlement of price and wage questions for the remainder of this year, clarification of the automotive industry's plans and an outcome of the principal state primary elections which business might regard as favorable, are among factors on the immediate horizon. The war scare has had remote psychological effect upon business in general.

A price announcement for fourth quarter is expected within a few days. Base prices are holding well, practically the only worry being quantity deductions.

Publicly financed construction continues as the strongest point in the present picture.

Bars, Shapes and Plates

Demand from machinery manufacturers has enabled merchant bar sales to rise approximately 10 per cent so far this month over the comparable August period. Requirements of the implement trade have been below expectations and the railroads are inactive. Sheet bar sales to non-integrated producers are good. Activity in plates is stronger than a month ago. Acme Railroad Construction Co., Cleveland, has been awarded a Government contract for 26,000 ft. of trackage and 36 switches at Savanna, Ill.

Sheets and Strip

Incoming tonnage so far this month continues to lag slightly behind the comparable August period, when large tonnages were placed, particularly during the first week. While a price announcement is expected soon, there have been very few requests for flat-rolled products for fourth quarter, most consumers preferring to buy only for immediate use. Activity of automotive accessory manufacturers remains modest. One or two large manufacturers of refrigerators and washing machines have stepped up operations in this district.

Bolts, Nuts and Rivets

Orders for bolts, nuts and rivets show improvement. September holds promise of substantial gains over August if automotive releases come through as anticipated. Publicly financed construction and shipbuilding are the mainstays of the rivet market and are helping fill the void created by the railroads' inactivity. New consumer prices are out on semi-finished hexagon nuts, with the U.S.S. and S.A.E. qualities quoted separately. Price action on machine and carriage bolts and hot pressed nuts is contemplated.

Pig Iron

Shipments so far this month are holding up comparable to August. Orders remain scarce. Producers indicate that they would accept fourth quarter contracts at current published quotations, but point out that demand has been negligible. There have been no formal announcements as to fourth quarter prices up to the time of this writing. A few foundries are active on seasonal castings. Automotive melters should become more active toward the latter part of this month, in the light of past performances. The railroad equipment and agricultural implement industries are quiet.

Wire and Wire Products

Demand for manufacturers' wire so far this month continues to hold a slight edge over the volume for the

identical August period. In line with past performances, producers anticipate increased specifications during the latter part of this month. Very little concern has been shown by consumers over the price question for fourth quarter.

Tubular Goods

Tonnages for several small connecting oil lines and a fair amount of casing orders have enabled tubular goods producers in this district to show a slight gain for the first 10 days of September over August. The Illinois field has been particularly active in the casing market. Standard pipe continues in fair demand. Low prices prevent profits for producers on the present aggregate volume. National Construction Co., Cleveland, is low bidder on the 1000-ton intake line at Sandusky, Ohio, which will be 42-in. steel pipe. The Christopher Co., Chagrin Falls, is low bidder on the 24-in. line at Sandusky, which will be cast iron and amounts to approximately 750 tons.

... BIRMINGHAM ...

... Another blast furnace to go in ... Steel demand steady.

BIRMINGHAM, Sept. 13.—Cotton ties, wire products and plates were the most active last week. The general trend of the steel market continues satisfactory and further gains are expected with the farm marketing season. Production of the tin plate mill has lately been increased.

There is very little change in the pig iron market, which is already on a firm basis as a result of previous bookings. This is indicated by the present rate of production.

Last week 12 and 13 open hearth units were in operation. This week 13 are scheduled, six at Fairfield, three at Ensley and four at Gadsden.

Blast furnace operations are unchanged. There are 13 active stacks. Woodward Iron Co. is making preparations to blow in its third stack this week. This will place the company on a 100 per cent basis, as to blast furnace operations, and will increase the district's total to 14.

Hardaway Contracting Co., Columbus, Ga., was the low bidder, at \$195,200, for the construction of the concrete deck for the new State highway bridge across the Tennessee River between Florence and Sheffield, Ala. Contracts for the approaches, substructure and superstructure have already been let.

..CAST IRON PIPE..

Pawtucket, R. I., has awarded 1000 tons of 6 to 20-in. pipe to United States Pipe & Foundry Co.

Worcester, Mass., has under consideration a water system to cost about \$320,000. Whitman & Howard, 89 Broad Street, Boston, are consulting engineers.

Cumberland, Md., plans pipe line extensions and replacements in water system. Cost about \$138,500. Financing has been arranged through Federal aid. Ralph L. Rizer is city engineer.

Upper Marlboro, Md., plans about 10,000 lin. ft. of 6-in. pipe for water system; also 100,000-gal. elevated steel tank and tower, deep-well pumping machinery and other waterworks installation. Cost about \$35,000. Financing in part is through Federal aid.

Public Water District No. 2, Clay County, Mo., care of Henric-Lowry Engineering Co., 114 West Tenth Street, Kansas City, Mo.,

consulting engineer, plans about 12 miles for water system. Bond issue of \$47,500 has been authorized.

Halifax, N. C., plans about 13,000 lin. ft. of 2 to 8-in. for water system; also 75,000-gal. elevated steel tank and tower, pumping machinery and auxiliary equipment. Fund of \$60,000 has been arranged through Federal aid for this and sewerage system.

Chino, Cal., plans pipe line extensions in water system. Cost about \$30,475. Financing is being arranged in part through Federal aid. R. V. Ward is engineer.

Jacksonville, Ore., plans about 17,150 lin. ft. of 3, 4, 6 and 8-in. for water system. Main pipe line will be built to Medford, Ore., to secure supply from that source. Cost about \$39,500. Financing is being arranged through Federal aid.

Springhill, Kan., plans pipe lines for water system and other waterworks installation. Cost about \$75,000. Special election has been called Sept. 23 to approve bonds for \$41,250, remainder of fund to be secured through Fed-

eral aid. Shockley Engineering Co., Graphic Arts Building, Kansas City, Mo., is consulting engineer.

Dalton, Ga., plans about 15,000 lin. ft. of 6 and 8-in. for water system extensions, and 1700 ft. of 6-in. to replace present 4-in. lines; also improvements in filtration plant and other waterworks installation. Cost about \$124,000 with sewage system, which will be carried out at same time; fund of \$55,995 has been secured through Federal grant.

Levy Court of New Castle County, Wilmington, Del., John W. Alden, Public Building, County engineer, asks bids until Sept. 27 for miscellaneous bell and spigot, and flanged cast iron pipe and fittings for sewage disposal plant, Richardson Park, Del.

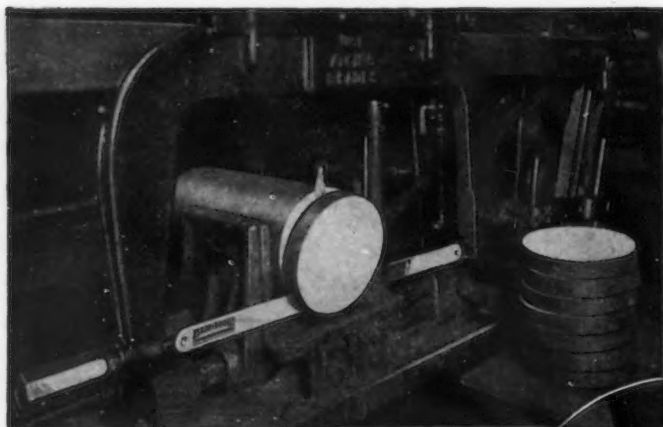
Rockwell, N. C., closes bids Sept. 19 for 14,030 lin. ft. of 4, 6 and 8-in., 6320 ft. of 2-in. and smaller, for water system; also for 100,000-gal. elevated steel tank and tower, with alternate bids on 75,000-gal. tank and tower; pumping machinery and other waterworks installation. Bids will be taken at same time for sewerage system. Paul M. Van Camp, Southern Pines, N. C., is consulting engineer.

Black Creek, Wis., plans construction of waterworks and sewerage system as PWA project. Plans being made by McMahon Engineering Co., Menasha, Wis. Cost remains to be finally estimated. Sanford Barth is village clerk.

Ripon, Wis., has engaged McMahon Engineering Co., Menasha, Wis., to make survey for waterworks extensions. C. H. Whiting is city clerk.

Martinez, Cal., asks bids Sept. 21 on water main extensions requiring 273 tons of 6, 8, and 10-in. cast iron pipe and fittings, provided steel and cement alternates on certain lines are not chosen.

Ministry of Public Health, Egyptian Government, office of Under-Secretary of State, Shareh El-Falaki, No. 25, Cairo, Egypt, asks bids until Nov. 26 for supply and installation of water pipe line and accessories for Bosat waterworks project. Plans at office of Consulate General of Egypt, 103 Park Avenue, New York, and at office of chief inspecting engineer, Egyptian Government, 41 Tothill Street, London, England.



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This is an actual photograph of a BLU-MOL Molybdenum hack saw blade on the job, and here's its actual performance record at the time the photograph was made:

MATERIAL—3 3/4 inch bar of Crescent Tool Steel, analyzing 100-110 carbon.

SPEED—75 strokes a minute.

PRESSURE—125 pounds.

PERFORMANCE—152 cuts—1678 square inches.

The teeth were still keen, the set in excellent condition and the blade was still cutting true and fast. The operator estimated it was good for at least 70 more cuts, or a total of 2448 square inches—a blade cost of only 1/3 mill per square inch.

Here's proof that BLU-MOL Molybdenum Blades give the lowest cost per cut of any hack saw blade on the market. If you're not using BLU-MOL Blades it will pay you to investigate. For a test on your own work 'phone a BLU-MOL distributor or write to us.

MILLERS FALLS COMPANY
Greenfield, Massachusetts



...BOSTON...

... Pig iron buying confined to car lots.

BOSTON, Sept. 13.—The half month will pass with no improvement in pig iron sales. Those of the past week were confined to a scattered carlot. Just now there is no indication when business will pick up. Stove manufacturers are melting more iron than they have in months and obtaining orders for their product, but they are well covered on iron and giving shipping instructions. Malleable iron foundries are doing fairly well, too, operating on the average five days a week, but at considerably less than capacity. Machinery, electrical equipment and jobbing foundries are doing no better.

.. PHILADELPHIA ..

... Business fails to recover from holiday doldrums ...

Scrap prices are unchanged, but undertone is noticeably firmer ... Ingot output recovers to 28 per cent.

PHILADELPHIA, Sept. 13.—Sales in the past week, the first full week since the holiday week, were disappointing to sellers here. The volume of business booked was just about equal to the short week, and as yet there is no evidence of the improvement that was predicted would follow Labor Day. Many sales statisticians are now estimating that, on the basis of the immediate outlook, September business will probably just about equal that of August. The extent of the present dullness may be judged by the fact that one warehouse reports that the week's orders were the lightest of any week so far this year. The cause of this poor volume is attributed by many to the uncertainty that still surrounds fourth quarter prices. That consumers are interested in this matter is evidenced by the rising volume of inquiries for supplies in that period. The practice of most sellers at present is to guarantee current prices for deliveries up to Sept. 30, but for shipments beyond that date they assert that prices prevailing at the time of shipment will govern.

Optimism, however, still characterizes all appraisals of long term prospects. This attitude is predicated primarily upon the belief that the full effect of the Federal Government's spending program has not as yet been felt by the secondary industries and that as soon as production on 1939 automobiles hits its stride there is bound to be a favorable reaction on a large number of consumers in this area.

The strike at the Philco radio plant here was recently settled, and about 250 of the 1300 workers previously employed in the plant have been called back to work.

Listlessness continues to characterize the scrap market. Prices are unchanged, with a \$14.50 top on No. 1 melting steel.

Ingot production in this district is estimated at 28 per cent of capacity for the current week, a gain of one point over the week preceding the holiday week.

Pig Iron

New business booked in the past week was extremely light, and it is apparent that foundry activity has failed to recover from the holiday shutdowns. No further formal price announcements have been made concerning fourth quarter orders but it is generally accepted that present prices will prevail through that period.

Plates and Shapes

Plate sales in the past week were at a low level. The only active plate users at present are the shipyards but commitments from this source are very small. Boat builders in this district anticipate booking a portion of the 12 boats for the Maritime Commission on which bids are being taken. Approximately 45,000 tons of plates and shapes will be required for these boats. Pending shape tonnages are fairly heavy, but are very slow in

....PIPE LINES....

Consumers Power Co., Jackson, Mich., plans new 4-in. welded steel pipe line from Six Lakes, Mich., natural gas field district to Edmore, Mich., and vicinity, for gas transmission.

El Paso, Tex., plans steel pipe lines for municipal natural gas distributing system, including main welded steel line for bulk transmission to city, control stations and other operating facilities. Cost about \$1,977,000. Application has been made for Federal grant and loan in that amount. Frazer & Benner, El Paso National Bank Building, are consulting engineers.

Toledo, Ohio, is completing surveys for new 48-in. main pressure water line from new source of supply in Lake Erie, to extend several miles into lake near Reno Beach, connecting with pumping station to be built on waterfront to furnish supply to new 64,000,000-gal. per day filtration plant to be located on Front Street. Project will include several 12-in. and smaller lines to connect with existing mains. Cost about \$9,000,000. Financing has been arranged through Federal aid. Surveys are in charge of Burns & McDonnell Engineering Co., 107 West Linwood Boulevard, Kansas City, Mo., consulting engineer. Construction Division, Water Department, 555 Erie Street, will carry out work.

Edward C. Dailey, Flint, Mich., is at head of project to build new 4-in. welded steel pipe line from natural gas field in Day and Home

leaving general contractors' hands. Awards made in the past week include 165 tons for a highway project in Delaware, placed with Pittsburgh-Des Moines Steel Co., and 116 tons for an addition to a plant at Oaks, Pa., to be fabricated by American Fabricated Steel Corp. Independent fabricating shops are comparatively inactive at present.

Reinforcing Bars

Prices, as evidenced by recent bidding on 180 tons for the Navy Department, are showing signs of recovering from the extreme weakness of the recent past. No awards of over 100 tons were made in the week, as small road jobs continue to supply the bulk of current sales.

Sheets and Strip

Sheets are moving very slowly into automobile parts plants, but improvement is expected as assemblies of the 1939 models in Detroit gather momentum. Demand from heating equipment makers has been gaining and domestic storage tank makers are seasonally active, the latter outlet at present taking in fair tonnages of 12 and 16 gage sheets. Strip items continue to move very slowly in the face of practically no buying by jobbers and very meager support from miscellaneous sources which heretofore have been the main support of the market.

Townships, Montcalm County, Mich., to Stanton, Mich., for gas transmission to that place.

St. Francisville, La., has let contract to Viking Supply Co., 2330 Summers Street, Dallas, Tex., for 10 miles of steel pipe lines for natural gas distribution; also an award to Doma Fontenet, Inc., Mamou, La., for electric welding of lines. Cost about \$35,000. Financing has been arranged through Federal aid. F. P. Joseph, Glenmora, La., is consulting engineer.

Glenn McCarthy, Sterling Building, Beaumont, Tex., and associates plan welded steel pipe line from gas field at West Beaumont to Beaumont for natural gas transmission for industrial service. Local franchise is now being considered by Beaumont city officials.

Canton, Kan., plans municipal gas plant and distributing pipe line system. Cost about \$37,000. Financing is being arranged through Federal aid. Hefling & Hunter, East Second Street, Hutchinson, Kan., are consulting engineers.

Metropolitan Water District, Los Angeles, asks bids Oct. 4 for completion of Palos Verdes feeder of Colorado River Aqueduct, involving approximately 13.5 miles of 51-in. steel, or 50-in. reinforced precast concrete pipe.

Tucumari, N. M., has awarded contract for five miles of 12-in. steel pipe line, steel tank and appurtenances to Southern Pipe & Casing Co., Azusa, Cal.

Tombstone and Benson, Ariz., ask bids separately Sept. 16 for natural gas distribution systems. Respective costs, PWA projects, are \$25,000 and \$35,000.

...NEW YORK...

... Price irregularities on some products ... Quantity deductions loosely interpreted ... Volume of orders rises for some sellers.

NEW YORK, Sept. 13.—Price irregularities have become a troublesome factor in this market. Products which are handled to a large extent in the resale market, such as galvanized sheets, wire nails, and merchant pipe, are particularly affected. In some instances warehouses having been setting the pace for the mills in that they are quoting prices on small lots approximately equal to the mill prices for carload lots. While there have been no outright breaks in base prices as quoted by mills, so far as can be definitely established, concessions in net prices are being affected by loose interpretations of various extras and deductions, particularly those applying to quantities.

The provision in extra lists on some products whereby a deduction of \$3 a ton is granted for "one grade or analysis released for shipment to one destination at one time" has been one of the trade practices most frequently violated. It is reported that quantities less than 150 tons have received the full discount and there has not always been strict insistence that the quantity of each size and gage be that called for in the extra lists. The \$2 deduction to jobbers on galvanized sheets has also, it is said, been granted rather freely to buyers who on a strict interpretation would not be classified as jobbers.

Meanwhile, business volume for most sellers in this district increased in the past week over the week that contained Labor Day. In a few instances the gains were surprisingly good. One or two major sellers, however, find that their total volume for the first half of September will be approximately the same as in the like period of August. Inquiries have become more numerous.

The Texas Co. is expected to place an order this week for 3000 tons of 8 and 10-in. pipe for a 75-mile pipe line.

Export trade is exceedingly dull both here and in the principal exporting countries of Europe. News has reached here that the International Steel Cartel and the Thin Sheet Cartel have reaffirmed present prices. It is reported from London that the com-

petition of American mills which are not members of the Steel Export Association of America has subsided. Assuming that the danger of a war in Europe continues to be a dominant factor during the next several months, it is believed that American exports of steel may show an increase owing to fears that the outbreak of hostilities would shut off exports of steel from Europe. Last year, when war talk was disturbing the world markets, nations in neutral zones came to the United States for steel, and a repetition of this situation is held to be possible. A general European war would undoubtedly cause stagnation in our export trade, at least temporarily.

Pig Iron

New sales are running moderately light to poor, but shipments are being maintained at a level comparable to that obtaining a month ago, and for some furnaces even better. There has been some pick-up in the melting rate of the smaller jobbing foundries, but for the large melters no change in operating rate is indicated. At least one seller in this district has formally reaffirmed prices for fourth-quarter iron, and others are accepting orders for delivery next month and after at current levels.

Plates and Sheets

Plate business is slightly better and is coming largely from tank builders who are seasonally active. Action is still awaited on the 30 scows for the Department of Sanitation. The New York Central has reopened its car and locomotive shops and some commitments have been made for the steel necessary for its recently announced car repair program. Export activity has subsided to extremely low levels.

Little change in the volume of sheet activity is noted in the past week. Stove makers continue to be the principal buyers. Jobber stocks are low in some instances and orders for replenishment in carlot quantities have occasionally been doubled before shipment. On the other hand, the secondary market as a whole in the metropolitan area is almost completely demoralized. A few big warehouses are holding to published prices, but at least two of the larger factors in

the Brooklyn-Queens area have been selling sheets, both galvanized and hot rolled, out of stock at prices a few cents above the carload price delivered direct from a mill. Pipe, nails and bolts have been similarly affected. Volume in these latter items is holding up well, principally due to activity at the World's Fair.

Reinforcing Bars

Small lot inquiries took a slight upward turn in the past week, but actual orders were slow in materializing. Awards of over 100 tons were less numerous than in the previous week, but the addition of about 800 tons of new proposals increased the volume of work still pending to approximately 8000 tons. The largest tonnage outstanding is the 5000 tons required for the Red Hook housing project in Queens. Bids on this project, originally scheduled to close on the 12th, have been postponed to the 14th. Prices have shown no improvement, but on the contrary there has been a tendency of small lot quotations, which have heretofore been relatively firm, to work lower.

....BUFFALO....

... Bethlehem blows in blast furnace; first increase in iron melt in four months.

BUFFALO, Sept. 13.—The first appreciable increase in the iron melt of the district in four months was made by the Bethlehem Steel Co. this week when it blew in a fourth furnace. Merchant iron producers report no change in demand.

Ingot production for the district is the same, with Bethlehem's Lackawanna plant operating 15 open-hearths. Wickwire-Spencer has two furnaces active, and the Republic Steel Corp., four.

Taken on a weekly basis, mills report orders about the same, although releases for parts manufacturers for automotive products have shown an increase. Alloy, carbon steel and bar stock are chiefly affected.

The Ross Engineering Co. of New York was awarded the general contract for the new barracks at Fort Niagara, N. Y., 150 tons of reinforcing steel will be needed.

The general contract for the school at Barker, N. Y., went to Roy Stockwell & Co., Lockport, N. Y., 250 tons of structural steel required for the job will be supplied by the Ernst Iron Works, Buffalo.

...NON-FERROUS...

... Lead and zinc sales in good volume ... War fear intensifies foreign copper buying ... Domestic prices remain unchanged, despite general rise in quotations abroad.

NEW YORK, Sept. 13.—The clouded political situation abroad had the effect of both supporting and depressing the demand for non-ferrous metals in the past week. Considerable support of the price structure was provided by the continued buying of copper for armament purposes, while the possibility of war had the effect of depressing the

demand from industrial buyers. Thus, one factor counteracted the other, and kept the foreign price fairly steady all week. This morning's price of 10.23c. per lb., c.i.f., usual European ports, is only one point above the price of a week ago. Purchases by copper-shy nations continue to be far in excess of normal industrial needs and there is no question that Europe

is stocking considerable red metal against the chances of a conflict. Domestic copper bookings were slightly higher in the past week, the week's total of 5400 tons bringing the total for the month through Saturday to 7120 tons. Bookings for the account of affiliated fabricators represented the bulk of the week's activities. Producers' prices here are unchanged at 10.125c. per lb., Connecticut Valley, for electrolytic copper.

Tin

The market continues to drift listlessly with buying interest nil and price movements guided primarily by political developments abroad. To-day's quotation on Straits metal is 42.75c. per lb., New York, identical to the price of a week ago. Tin buying abroad has also been very light and prices there have been working to lower levels. On first call in London this morning cash standards were quoted at £192 5s., and three months metal at £193 5s., as against £192 and £193 a week ago.

Zinc

Since the formation of the foreign lead cartel, spelter demand has been very active, both here and abroad. Inasmuch as both lead and zinc have a common origin, curtailment of lead output would, per se, reduce zinc production. Spelter sales in the week past were 4618 tons, or more than double the average of the past five weeks. Shipments were 3393 tons and prices were unchanged on the basis of 4.75c. per lb., East St. Louis. The London price, however, has been advancing, with prompt metal being quoted this morning in London at 3c. per lb.

Lead

As predicted last week, the news of the organization of a foreign cartel boosted the week's sales volume to the highest level since early July, with practically all consumers in the market. The bulk of the sales was for October delivery, yet despite the week's heavy volume, about 50 per cent of October's and 30 per cent of September's needs have not as yet been covered. While the cartel's restrictions on production will have no direct effect on domestic production, it has eliminated, for the time being at least, the possibility of foreign competition on a price basis lowering prices here. Domestic quotations are unchanged at 4.90c. per lb., New York, while the London price has moved up to 3.30c. per lb. for prompt metal.

The Week's Prices. Cents Per Pound for Early Delivery

	Sept. 8	Sept. 9	Sept. 10	Sept. 12	Sept. 13
Electrolytic copper, Conn.*	10.125	10.125	10.125	10.125	10.125
Lake copper, N. Y.	10.25	10.25	10.25	10.25	10.25
Straits tin, spot, New York	42.90	42.70	42.70	42.70	42.75
Zinc, East St. Louis	4.75	4.75	4.75	4.75	4.75
Zinc, New York	5.14	5.14	5.14	5.14	5.14
Lead, St. Louis	4.75	4.75	4.75	4.75	4.75
Lead, New York	4.90	4.90	4.90	4.90	4.90

*Delivered Connecticut Valley; price ¼c. lower delivered in New York.
Aluminum, virgin, 99 per cent plus 20.00c.-21.00c. a lb., delivered.
Aluminum No. 12 remelt No. 2 standard, in carloads, 19.00c. to 19.50c. a lb., delivered.
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.
Antimony, Asiatic, 14.00c. a lb., prompt, f.o.b., New York.
Antimony, American, 11.25c. per lb., prompt shipment, New York.
Quicksilver, \$76.00 to \$77.00 per flask of 76 lb.
Brass ingots, commercial 85-5-5, 10.75c. a lb., less carload, delivered in Middle West
¼c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse Delivered Prices, Base per Lb.

Tin, Straits pig	43.75c. to 44.75c.
Tin, bar	45.75c. to 46.75c.
Copper, Lake	11.375c. to 12.375c.
Copper, electrolytic	11.125c. to 12.125c.
Copper, castings	10.625c. to 11.625c.
*Copper sheets, hot-rolled	18.25c.
*High brass sheets	16.75c.
*Seamless brass tubes	19.50c.
*Seamless copper tubes	18.75c.
*Brass rod	12.75c.
Zinc, slabs	6.25c. to 7.25c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	10.50c.
Lead, American pig	5.50c. to 6.50c.
Lead, bar	6.25c. to 6.625c.
Lead, sheets, cut	7.75c.
Antimony, Asiatic	15.00c. to 16.00c.
Alum., virgin, 99 per cent plus	22.50c. to 24.00c.
Alum., No. 1 for remelting, 98 to 99 per cent	19.50c. to 21.00c.
Solder, ½ and ½	29.25c. to 30.25c.
Babbitt metal, commercial grade	20.00c. to 50.00c.

*These prices, which are also for delivery from Chicago and Cleveland warehouses, are quoted with the following percentages allowed off for extras: on copper sheets, 33 1/3; on brass sheets and rods, 40, and on brass and copper tubes, 25.

From Cleveland Warehouse Delivered Prices per Lb.

Tin, Straits, pig	47.00c.
Tin, bar	49.00c.
Copper, Lake	11.125c. to 11.375c.
Copper, electrolytic	11.125c. to 11.375c.
Copper, castings	10.925c.
Zinc, slabs	7.50c. to 7.75c.
Lead, American pig	5.40c. to 5.65c.
Lead, bar	8.50c.
Antimony, Asiatic	17.75c. to 18.00c.
Babbitt metal, medium grade	21.00c.
Babbitt metal, high grade	51.00c.
Solder, ½ and ½	28.00c.

Old Metals Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	8.125c.	8.875c.
Copper, hvy. and wire	7.125c.	7.625c.
Copper, light and bottoms	6.375c.	6.625c.
Brass, heavy	4.375c.	4.875c.
Brass, light	3.375c.	4.125c.
Hvy. machine composition	6.875c.	8.375c.
No. 1 yel. brass turnings	4.25c.	4.75c.
No. 1 red brass or compos. turnings	6.375c.	6.875c.
Lead, heavy	3.50c.	3.875c.
Cast aluminum	7.00c.	8.25c.
Sheet aluminum	11.25c.	12.75c.
Zinc	2.125c.	3.375c.

IRON AND STEEL SCRAP

... Markets drift, despite fairly strong undertone ...
Composite unchanged at \$14.42.

SEPT. 13.—Railroad heavy melting steel is showing some signs of strength at Pittsburgh, but the price of No. 1 heavy melting steel remains unchanged in most markets. THE IRON AGE composite is the same as last week, \$14.42. A reaction has set in at Youngstown, and prices are down 50c. there on the principal grades. The whole Cincinnati list is down 25c. as dealers mark time, and bundles are softer at Detroit. Short coverage in the St. Louis area, however, has tended to boost prices on railroad specialties, but not on the regular melting grades. Blast furnace material at Cleveland is quoted lower than last week, and railroad specialties show mixed trends.

New York brokers have not changed their buying prices for export material, but Boston dealers have gone more bullish on the last export order to the cartel.

Pittsburgh

A strong undertone continues and although a small tonnage of No. 1 steel was sold into consumption in the past week at \$15 a ton, some brokers are still paying \$15.50 for other points in the district. Heavy melting steel on a recent railroad list went to a broker for over \$16 a ton and current quotations of \$16 to \$16.50 for railroad heavy melting have been substantiated by recent sales into consumption. No. 2 heavy melting is stronger, with some brokers offering \$14 a ton, although odd cars have been purchased for less.

Chicago

A sale at \$14 last week merely maintains this market at its position of the past few weeks. With operations improving only slowly, little extensive trading is being anticipated in the near future. No railroad lists of consequence were sold last week, but about 3000 tons is to be bid next week by the Alton and E. J. & E.

Philadelphia

The market remains in the doldrums, with no mill activity to test prices and dealers continuing to hold their stocks in anticipation of better prices in the near future. Quotations are unchanged, with No. 1 steel quotable at \$14 to \$14.50. Prices on railroad specialties are nominal due to the inactivity of these grades for some time. Shipments of cast grades to

foundries have shown a sharp contraction over the past two weeks. Despite the absence of sales, the undertone of the market is noticeably firmer, a development credited to the recent cartel sale, although in all probability very little of the scrap involved in this order will be shipped from this district.

Cleveland

The market continues to wait for developments, as it has for many months. In some quarters it is believed there may be action here before long, if mill operations continue to rise. While the Fisher Body plant and a number of similar factories have resumed or stepped up operations recently, too short a time has elapsed to make any material difference in the amount of scrap available. Quotations on some of the lighter grades and some of the railroad items are revised.

Youngstown

After weeks of inactivity, No. 1 heavy melting steel is down 50c. to \$14 to \$14.50 per ton. The reaction is not considered serious, however, as mill operations are holding up. Some persons expect possible action at Warren, Ohio, before long.

Buffalo

With the largest district consumer increasing its melt to supplement diminishing scrap piles, the market continues to mark time. There is no indication of weakness despite a lack of sales, and spirit is optimistic. No. 1 heavy melting steel maintains its price of \$14.00 to \$14.50 with the usual differential in the allied grades.

St. Louis

The market for scrap iron and steel continues firm, mainly because of efforts to cover by dealers on recent heavy commitments of No. 2 heavy melting steel. The latest advance in prices has had the effect of loosening up country's shipments, also railroad offerings, but there is still a formidable short interest. Relatively little scrap is being originated by the industries. Inventories at commercial yards have varied only slightly in recent weeks, and are about normal for this time of year. Extreme high temperatures last week had the effect of halting yard and manufacturing operations. Outside inquiry for bundled sheets, borings and turnings and some other items has picked up, but differentials are still too narrow to permit of profitable shipments from this center.

Cincinnati

Lack of activity and softness in other areas reduced local scrap bidding 25c. over the whole list, the past week. Deal-

ers mark time in an effort to catch the market trend and cover only for contracts. Mills are reported interested, but not actively in the market.

Detroit

Scrap movement has shown definite signs of slowing in recent weeks in this area. Particularly there has been a depressing effect on the market for blast furnace grades as a result of word that the area's important consuming furnaces are using 100 per cent ore. Many dealers have been holding tonnages of blast furnace scrap which they thought might be bought for a new furnace which recently went into operation. Quoted prices are purely nominal since there has been no recent activity in these grades.

Boston

Sentiment in the export market has undergone a decided change for the better. Bids for No. 1 heavy melting steel of \$13 a ton, delivered dock, have been made at various New England shipping points, and of \$12 a ton for No. 2 steel. Some bids of \$12.50 and \$11.50 a ton respectively are still outstanding, but the market is unquestionably firmer. Domestic mills are not buying scrap in this territory, and foundry buying of cast has dried up.

New York

Since the last European cartel sale of 80,000 tons, which is largely going to Italy, was practically discounted in advance, there has been no effect on broker buying prices for export. Much of the tonnage on the old order has yet to be liquidated and shipments are going forward at an even rate. Recent Japanese purchases have been covered, but it is expected that regular monthly commitments will be made from now on. Domestic car prices have been modified on steel making grades to conform with delivered prices in eastern Pennsylvania.

Pittsburgh Valve, Founded In 1900, Being Liquidated

PITTSBURGH.—Pittsburgh Valve, Foundry & Construction Co., of this city, maker of valves, fittings and power piping for 38 years, is being liquidated and its entire equipment sold. Machinery is being disposed of by Thomas J. Llewellyn, 911 Oliver Building, Pittsburgh.

The company was formed in November, 1900, when a consolidation of the following concerns took place: A. Speer & Sons Foundry, Atwood McCaffrey Co., Wilson Snyder Pipe Department, Shook Anderson Mfg. Co., and Pittsburgh Valve & Machine Co. The history of the A. Speer & Sons Foundry dates back to 1825 when the Hall-Speer Foundry Co. was formed. At its peak employment, Pittsburgh Valve, Foundry & Construction Co. employed 600.

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$15.00 to \$15.50
Railroad hvy. mltng.	16.00 to 16.50
No. 2 hvy. mltng. steel	13.75 to 14.25
Scrap rails	16.50 to 17.00
Rails 3 ft. and under.	16.50 to 17.00
Comp. sheet steel	15.00 to 15.50
Hand bundled sheets	14.00 to 14.50
Hvy. steel axle turn.	13.50 to 14.00
Machine shop turn.	9.50 to 10.00
Short shov. turn.	9.50 to 10.00
Mixed bor. & turn.	8.25 to 8.75
Cast iron borings	8.25 to 8.75
Cast iron carwheels	14.50 to 15.00
Hvy. breakable cast.	12.50 to 13.00
No. 1 cupola cast.	15.25 to 15.75
RR. knuckles & cplrs.	17.00 to 17.50
Rail coil & leaf springs	17.00 to 17.50
Rolled steel wheels.	17.00 to 17.50
Low phos. billet crops.	17.50 to 18.00
Low phos. punchings.	16.00 to 16.50
Low phos. plate	16.00 to 16.50

PHILADELPHIA

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$14.00 to \$14.50
No. 2 hvy. mltng. steel.	12.50 to 13.00
Hydraulic bund., new.	14.00 to 14.50
Hydraulic bund., old.	11.00 to 11.50
Steel rails for rolling.	17.00 to 17.50
Cast iron carwheels.	16.50 to 17.00
Hvy. breakable cast.	15.50 to 16.00
No. 1 cast	16.00 to 16.50
Stove plate (steel wks.)	13.00 to 13.50
Railroad malleable	15.50 to 16.00
Machine shop turn.	8.00 to 8.50
No. 1 blast furnace	6.50 to 7.00
Cast borings	6.50 to 7.00
Heavy axle turnings.	10.00 to 10.50
No. 1 low phos. hvy.	16.50 to 17.00
Couplers & knuckles	16.50 to 17.00
Rolled steel wheels	16.50 to 17.00
Steel axles	21.50 to 22.00
Shafting	19.00 to 19.50
No. 1 RR. wrought.	15.00 to 15.50
Spec. iron & steel pipe	12.00 to 12.50
No. 1 forge fire	10.50 to 11.00
Cast borings (chem.)	9.50 to 10.00

CHICAGO

Delivered to Chicago district consumers:

Per Gross Ton	
Hvy. mltng. steel	\$13.50 to \$14.00
Auto. hvy. mltng. steel alloy free	12.00 to 12.50
No. 2 auto. steel	11.50 to 12.00
Shoveling steel	13.50 to 14.00
Factory bundles	12.50 to 13.00
Dealers' bundles	12.00 to 12.50
Drop forge flashings	10.00 to 10.50
No. 1 busheling	12.50 to 13.00
No. 2 busheling, old.	5.25 to 5.75
Rolled carwheels	16.00 to 16.50
Railroad tires, cut.	16.50 to 17.00
Railroad leaf springs	16.50 to 17.00
Steel coup. & knuckles	15.00 to 15.50
Axle turnings	12.50 to 13.00
Coil springs	17.00 to 17.50
Axle turn. (elec.)	13.00 to 13.50
Low phos. punchings.	16.50 to 17.00
Low phos. plates 12 in. and under	16.50 to 17.00
Cast iron borings	6.50 to 7.00
Short shov. turn.	7.50 to 8.00
Machine shop turn.	6.50 to 7.00
Rerolling rails	18.00 to 18.50
Steel rails under 3 ft.	16.50 to 17.00
Steel rails under 2 ft.	17.00 to 17.50
Angle bars, steel	16.00 to 16.50
Cast iron carwheels	14.00 to 14.50
Railroad malleable	15.00 to 15.50
Agric. malleable	11.00 to 11.50

Per Net Ton	
Iron car axles	19.00 to 19.50
Steel car axles	19.50 to 20.00
Locomotive tires	16.50 to 17.00
Pipes and flues	9.50 to 10.00
No. 1 machinery cast.	13.00 to 13.50
Clean auto. cast.	12.50 to 13.00
No. 1 railroad cast.	12.00 to 12.50
No. 1 agric. cast.	11.50 to 12.00
Stove plate	9.50 to 10.00
Grate bars	9.50 to 10.00
Brake shoes	10.50 to 11.00

YOUNGSTOWN

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$14.00 to \$14.50
No. 2 hvy. mltng. steel.	13.00 to 13.50
Low phos. plate	14.50 to 15.00
No. 1 busheling	13.50 to 14.00
Hydraulic bundles	13.00 to 13.50
Machine shop turn.	9.50 to 10.00

CLEVELAND

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$12.50 to \$13.00
No. 2 hvy. mltng. steel.	11.50 to 12.00
Comp. sheet steel	12.00 to 12.50
Light bund. stampings	9.00 to 9.50
Drop forge flashings	10.00 to 10.50
Machine shop turn.	7.00 to 7.50
Short shov. turn.	7.50 to 8.00
No. 1 busheling	11.00 to 11.50
Steel axle turnings	10.00 to 10.50
Low phos. billet and bloom crops	17.00 to 17.50
Cast iron borings	7.75 to 8.25
Mixed bor. & turn.	7.75 to 8.25
No. 2 busheling	7.75 to 8.25
No. 1 cast	16.50 to 17.00
Railroad grate bars	9.50 to 10.00
Stove plate	10.00 to 10.50
Rails under 3 ft.	18.50 to 19.00
Rails for rolling	17.00 to 17.50
Railroad malleable	15.00 to 15.50
Cast iron carwheels	14.00 to 14.50

BUFFALO

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$14.00 to \$14.50
No. 2 hvy. mltng. steel.	12.00 to 12.50
Scrap rails	15.00 to 15.50
New hvy. bndled sheets	12.00 to 12.50
Old hydraul. bundles.	10.50 to 11.00
Drop forge flashings	12.00 to 12.50
No. 1 busheling	12.00 to 12.50
Hvy. axle turnings	10.50 to 11.00
Machine shop turn.	6.75 to 7.25
Knuckles & couplers	16.50 to 17.00
Coil & leaf springs	16.50 to 17.00
Rolled steel wheels	16.00 to 16.50
Low phos. billet crops.	15.50 to 16.00
Shov. turnings	6.75 to 7.25
Mixed bor. & turn.	6.75 to 7.25
Cast iron borings	6.50 to 7.00
Steel car axles	16.50 to 17.00
No. 1 machinery cast.	15.50 to 16.00
No. 1 cupola cast.	14.50 to 15.00
Stove plate	13.00 to 13.50
Steel rails under 3 ft.	17.50 to 18.00
Cast iron carwheels	13.50 to 14.00
Railroad malleable	14.50 to 15.00
Chemical borings	8.50 to 9.00

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:

Selected hvy. melting	\$12.50 to \$13.00
No. 1 hvy. melting	12.50 to 13.00
No. 2 hvy. melting	12.00 to 12.50
No. 1 locomotive tires	14.00 to 14.50
Misc. stand. sec. rails	14.00 to 14.50
Railroad springs	15.00 to 15.50
Bundled sheets	8.00 to 8.50
No. 1 busheling	7.50 to 8.00
Cast. bor. & turn.	4.25 to 4.75
Machine shop turn.	4.25 to 4.75
Heavy turnings	9.00 to 9.50
Rails for rolling	16.50 to 17.00
Steel car axles	18.50 to 19.00
No. 1 RR. wrought.	10.75 to 11.25
No. 2 RR. wrought.	12.50 to 13.00
Steel rails under 3 ft.	14.50 to 15.00
Steel angle bars	14.50 to 15.00
Cast iron carwheels	13.00 to 13.50
No. 1 machinery cast.	14.00 to 14.50
Railroad malleable	12.50 to 13.00
No. 1 railroad cast.	11.00 to 11.50
Stove plate	10.00 to 10.50
Grate bars	8.50 to 9.00
Brake shoes	10.00 to 10.50

CINCINNATI

Dealers' buying prices per gross ton at yards:

No. 1 hvy. mltng. steel.	\$11.25 to \$11.75
No. 2 hvy. mltng. steel.	9.00 to 9.75
Scrap rails for mltng.	15.25 to 15.75
Loose sheet clippings	6.75 to 7.25
Hydrau. b'ndled sheets	10.25 to 10.75
Cast iron borings	3.25 to 3.75
Machine shop turn.	3.75 to 4.25
No. 1 busheling	8.00 to 8.50
No. 2 busheling	2.75 to 3.25
Rails for rolling	17.25 to 17.75
No. 1 locomotive tires	14.00 to 14.50
Short rails	17.75 to 18.25
Cast iron carwheels	12.50 to 13.00
No. 1 machinery cast.	12.00 to 12.50
No. 1 railroad cast.	11.00 to 11.50
Burnt cast	7.00 to 7.50
Stove plate	7.00 to 7.50
Agricul. malleable	11.50 to 12.00
Railroad malleable	14.50 to 15.00
Mixed hvy. cast.	9.50 to 10.00

BIRMINGHAM

Per gross ton delivered to consumer:	
Hvy. melting steel.	\$12.50 to \$14.00
Scrap steel rails	14.50 to 15.00
Short shov. turnings	7.50 to 8.10
Stove plate	9.00 to 10.00
Steel axles	15.00 to 16.00
Iron axles	15.00 to 16.00
No. 1 RR. wrought.	10.00
Rails for rolling	16.00 to 16.50
No. 1 cast	14.50
Tramcar wheels	14.00

DETROIT

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel.	\$10.00 to \$10.50
No. 2 hvy. mltng. steel.	8.50 to 9.00
Borings and turnings	6.00 to 6.50
Long turnings	6.00 to 6.50
Short shov. turnings	7.00 to 7.50
No. 1 machinery cast.	11.50 to 12.00
Automotive cast	12.50 to 13.00
Hvy. breakable cast.	9.00 to 9.50
Hydraulic comp. sheets	12.00 to 12.50
Stove plate	8.00 to 8.50
New factory bushel.	11.00 to 11.50
Old No. 2 busheling	3.00 to 3.50
Sheet clippings	8.50 to 9.00
Flashings	9.00 to 9.50
Low phos. plate scrap	11.50 to 12.00

NEW YORK

Dealers' buying prices per gross ton on cars:	
No. 1 hvy. mltng. steel.	\$10.00 to \$10.50
No. 2 hvy. mltng. steel	8.50 to 9.00
Hvy. breakable cast.	11.50 to 12.00
No. 1 machinery cast.	12.00 to 12.50
No. 2 cast	9.50 to 10.00
Stove plate	9.00 to 9.50
Steel car axles	20.00 to 20.50
Shafting	15.00 to 15.50
No. 1 RR. wrought.	11.00 to 11.50
No. 1 wrought long.	9.50 to 10.00
Spec. iron & steel pipe	8.50 to 9.00
Rails for rolling	16.00 to 16.50
Clean steel turnings*	3.50 to 4.00
Cast borings*	3.00 to 3.50
No. 1 blast furnace.	3.00 to 3.50
Cast borings (chem.)	9.50 to 10.00
Unprepared yard scrap	5.00 to 5.50
Light iron	3.00 to 3.50
Per gross ton, delivered local foundries:	
No. 1 machn. cast†	\$13.50 to \$14.00
No. 2 cast†	10.50 to 11.00

* \$1.50 less for truck loads.

† Northern N. J. prices are \$2 to \$2.50 higher.

BOSTON

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel.	Nominal
Scrap rails	Nominal
No. 2 steel	Nominal
Breakable cast	\$10.15
Machine shop turn.	\$3.38 to 4.50
Mixed bor. & turn.	2.00
Bun. skeleton long.	7.00 to 7.25
Shafting	14.50 to 14.95
Cast bor. chemical.	5.50 to 5.75
Per gross ton delivered consumers' yards:	
Textile cast	\$14.50 to \$15.00
No. 1 machine cast.	14.00 to 14.50

PACIFIC COAST

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$12.50 to \$13.00
No. 2 hvy. mltng. steel.	11.50 to 12.00

CANADA

Dealers' buying prices at their yards, per gross ton:

Toronto Montreal	
No. 1 hvy. mltng. steel.	\$9.50 \$9.00
No. 2 hvy. mltng. steel.	8.00 7.50
Mixed dealers steel.	7.00 6.50
Scrap pipe	5.50 5.00
Steel turnings	4.50 4.00
Cast borings	3.50 3.00
Machinery cast	15.00 14.00
Dealers cast	13.00 12.00
Stove plate	11.00 10.50

EXPORT

Dealers' buying prices per gross ton:	
New York, truck lots, delivered, barges	
No. 1 hvy. mltng. steel.	\$11.00 to \$11.50
No. 2 hvy. mltng. steel.	9.50 to 10.00
No. 2 cast	10.00 to 11.00
Stove plate	9.00 to 10.00

Boston on cars at Army Base

or Mystic Wharf

No. 1 hvy. mltng. steel.	\$12.50 to \$13.00
No. 2 hvy. mltng. steel.	11.50 to 12.00
Rails (scrap)	12.50 to 13.00

Philadelphia, delivered alongside boats,

Port Richmond

No. 1 hvy. mltng. steel.	Nominal
No. 2 hvy. mltng. steel.	Nominal

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

SEMI-FINISHED STEEL

Billets, Blooms and Slabs
Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (Rerolling only). Prices delivered Detroit are \$2 higher. F.o.b. Duluth, billets only, \$2 higher.
Per Gross Ton
Rerolling\$34.00
Forging quality 40.00

Sheet Bars
Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.
Per Gross Ton
Open-hearth or bessemer\$34.00

Skelp
Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.
Per Lb.
Grooved, universal and sheared1.90c.

Wire Rods
(No. 5 to 9/32 in.)
Per Gross Ton
Pittsburgh, Chicago or Cleveland\$43.00
Worcester, Mass. 45.00
Birmingham 43.00
San Francisco 52.00
Rods over 9/32 in. or 47/64 in., inclusive, \$5 a ton over base.

SOFT STEEL BARS

Base per Lb.
Pittsburgh, Chicago, Gary, Cleveland, Buffalo and Birmingham 2.25c.
Detroit, delivered 2.35c.
Duluth 2.35c.
Philadelphia delivered 2.57c.
New York 2.59c.
On cars dock Gulf ports 2.60c.
On cars dock Pacific ports 2.85c.

RAIL STEEL BARS

(For merchant trade)
Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham 2.10c.
On cars dock Tex. Gulf ports.. 2.45c.
On cars dock Pacific ports.. 2.70c.

BILLET STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)
Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Cleveland, Youngstown or Sparrows Pt. 1.90c. to 2.05c.
Detroit, delivered 2.00c. to 2.15c.
On cars dock Tex. Gulf ports 2.25c. to 2.40c.
On cars dock Pacific ports.... 2.50c.

RAIL STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)
Pittsburgh, Chicago, Gary, Buffalo, Cleveland, Youngstown or Birmingham 1.75c. to 1.90c.
Detroit, delivered 1.85c. to 2.00c.
On cars dock Tex. Gulf ports 2.10c. to 2.25c.
On cars dock Pacific ports.... 2.35c.
The above range in prices covers generally the spread between large and small jobs.

IRON BARS

Chicago and Terre Haute 2.15c.
Pittsburgh (refined) 3.60c.

COLD FINISHED BARS AND SHAFTING*

Base per Lb.
Pittsburgh, Buffalo, Cleveland, Chicago and Gary 2.70c.
Detroit 2.75c.

* In quantities of 10,000 to 19,999 lb.

PLATES

Base per Lb.
Pittsburgh, Chicago, Gary, Birmingham, Sparrows Point, Cleveland, Youngstown, Coatesville, Claymont, Del. 2.10c.
Philadelphia, del'd 2.15c.
New York, del'd 2.29c.
On cars dock Gulf ports..... 2.45c.
On cars dock Pacific ports..... 2.60c.
Wrought iron plates, P't'g.... 3.80c.

FLOOR PLATES

Pittsburgh or Chicago 3.35c.
New York, del'd 3.71c.
On cars dock Gulf ports 3.70c.
On cars dock Pacific ports..... 3.95c.

STRUCTURAL SHAPES

Base per Lb.
Pittsburgh, Chicago, Gary, Buffalo, Bethlehem or Birmingham 2.10c.
Philadelphia, del'd 2.215c.
New York, del'd 2.27c.
On cars dock Gulf ports..... 2.45c.
On cars dock Pacific ports.... 2.70c.

STEEL SHEET PILING

Base per Lb.
Pittsburgh, Chicago or Buffalo 2.40c.
On cars dock Gulf ports 2.85c.
On cars dock Pacific ports 2.90c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill
Standard rails, heavier than 60 lb., per gross ton.....\$42.50
Angle bars, per 100 lb..... 2.80

F.o.b. Basing Points
Light rails (from billets) per gross ton\$40.00
Light rails (from rail steel) per gross ton 39.00

Base per Lb.
Spikes 3.15c.
Tie plates, steel 2.30c.
Tie plates, Pacific Coast ports. 2.40c.
Track bolts, to steam railroads 4.35c.
Track bolts, to jobbers, all sizes (per 100 counts)

65-5 per cent off list
Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa., Buffalo; on spikes alone, Youngstown, Lebanon, Pa., Richmond, Va.

SHEETS

PRICES F.O.B. UNLESS OTHERWISE NOTED

Hot Rolled

Base per Lb.
Pittsburgh, Gary, Birmingham, Buffalo, Sparrows Point, Cleveland, Youngstown or Middletown 2.15c.
Detroit, delivered 2.25c.
Philadelphia, delivered 2.32c.
Granite City 2.25c.
On cars dock Pacific ports.... 2.65c.
Wrought iron, Pittsburgh.... 4.25c.

Cold Rolled*

Pittsburgh, Gary, Buffalo, Youngstown, Cleveland or Middletown 3.20c.
Detroit, delivered 3.30c.
Granite City 3.30c.
Philadelphia, delivered 3.52c.
On cars dock Pacific ports.... 3.80c.

* Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base.

Galvanized Sheets, 24 Gage

Pittsburgh, Gary, Sparrows Point, Buffalo, Middletown, Youngstown or Birmingham 3.50c.
Philadelphia, del'd 3.67c.
Granite City 3.60c.
On cars dock Pacific ports..... 4.00c.
Wrought iron, Pittsburgh.... 6.10c.

Electrical Sheets (F.o.b. Pittsburgh)

Base per Lb.
Field grade 3.20c.
Armature 3.55c.
Electrical 4.05c.
Special Motor 4.95c.
Special Dynamo 5.65c.
Transformer 6.15c.
Transformer Special 7.15c.
Transformer Extra Special... 7.65c.

Silicon Strip in coils—Sheet price plus silicon sheet extra width extras plus 25c. per 100 lb. for coils. Pacific ports add 70c. a 100 lb.

Long Ternes

No. 24 unassorted 8-lb. coating f.o.b. Pittsburgh or Gary.... 3.95c.
F.o.b. cars dock Pacific ports. 4.65c.

Vitreous Enameling Stock, 20 Gage
Pittsburgh, Gary Youngstown, Middletown or Cleveland... 3.35c.
Detroit, del'd 3.45c.
Granite City 3.45c.
On cars dock Pacific ports ... 3.95c.

TIN MILL PRODUCTS

Black Plate

Pittsburgh 3.15c.
Gary 3.15c.
Granite City 3.25c.
On cars dock Pacific ports, boxed 4.10c.

NOTE: No. 29 gage is heaviest in which tin mill black plate is sold, No. 28 and heavier taking sheet base. There are no gages which take the above base prices as extras are applicable in all cases.

Tin Plate

Per Base Box
Standard cokes, Pittsburgh and Gary\$5.35
Standard cokes, Granite City... 5.46

Special Coated Manufacturing Ternes
Per Base Box
Pittsburgh\$4.65
Gary 4.65
Granite City 4.75

Roofing Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 112 sheets, 20 x 28 in.)
8-lb. coating I.C.\$12.00
15-lb. coating I.C. 14.00
20-lb. coating I.C. 15.00
25-lb. coating I.C. 16.00
30-lb. coating I.C. 17.25
40-lb. coating I.C. 19.50

HOT ROLLED STRIP

Prices F.o.b. Unless Otherwise Noted
(Widths up to 12 in.)

Base per Lb.
Pittsburgh, Chicago, Gary, Cleveland, Middletown, Youngstown or Birmingham 2.15c.
Detroit, delivered 2.25c.

Cooperage Stock

Pittsburgh & Chicago 2.25c.

COLD ROLLED STRIP*

Base per Lb.
Pittsburgh, Youngstown or Cleveland 2.95c.
Chicago 3.05c.
Detroit, delivered 3.05c.
Worcester 3.15c.

* Carbon 0.25 and less.

Commodity Cold Rolled Strip

Pittsburgh, Youngstown or Cleveland 3.10c.
Detroit, delivered 3.20c.
Worcester 3.50c.

COLD ROLLED SPRING STEEL

Pittsburgh and Cleveland Worcester
Carbon 0.26-0.50% 2.95c. 3.15c.
Carbon .51-.75 4.30c. 4.50c.
Carbon .76-1.00 6.15c. 6.35c.
Carbon 1.01 to 1.25 8.35c. 8.55c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh, Chicago, Cleveland and Birmingham)

To Manufacturing Trade

	Per Lb.
Bright wire	2.60c.
Galvanized wire, base	2.65c.*
Spring wire	3.20c.

*On galvanized wire to manufacturing trade, size and galvanizing extras are charged, the price Nos. 6 to 9 gage, inclusive, thus being 3.15c.

To the Trade

	Base per Keg
Standard wire nails	\$2.45
Coated nails	2.45
Cut nails, carloads	3.60

	Base per 100 Lb.
Annealed fence wire	\$2.95
Galvanized fence wire	3.35
Polished staples	3.15
Galvanized staples	3.40
Barbed wire, galvanized	3.20
Twisted barbless wire	3.20
Woven wire fence, base column. 67	
Single loop bale ties, base col... 56	

Note: Birmingham base same on above items, except spring wire.

Add \$4 a ton for Mobile, Ala.; \$5 for New Orleans; \$6 for Lake Charles to above bases, except on galvanized and annealed merchant fence wire, which are \$1 a ton additional in each case.

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

Butt Weld

In.	Steel Black Galv.	Wrought Iron Black Galv.
1/8	56 36	1/8 & 3/8 + 9 + 30
1/4	59 43 1/2	1/4 24 6 1/2
3/8	63 1/2 54	3/8 30 13
1/2	66 1/2 58	1 & 1 1/4 . 34 19
3/4	68 1/2 60 1/2	1 1/2 38 21 1/2
1 to 3	68 1/2 60 1/2	2 37 1/2 21

Lap Weld

2	61 52 1/2	2	30 1/2 15
2 1/2	63 55 1/2	2 1/2 to 3 1/2	31 1/2 17 1/2
3 1/2	66 57 1/2	4	33 1/2 21
7	8.65 55 1/2	4 1/2 to 8.32 1/2	20
9 & 10.64 1/2	55	9 to 12.28 1/2	15
11 & 12.63 1/2	54		

Butt Weld, extra strong, plain ends	Butt Weld, extra strong, plain ends
1/8 54 1/2 41 1/2	1/8 & 3/8 + 10 + 43
1/4 to 3/8 56 1/2 45 1/2	1/4 25 9
1/2 61 1/2 53 1/2	3/4 31 15
3/4 65 1/2 57 1/2	1 to 2 38 22 1/2
1 to 3 67 60	

Lap Weld, extra strong, plain ends	Lap Weld, extra strong, plain ends
2 59 51 1/2	2 33 1/2 18 1/2
2 1/2 & 63 55 1/2	2 1/2 to 4.39 25 1/2
3 1/2 to 66 1/2 59	4 1/2 to 6.37 1/2 24
7 & 8.65 55 1/2	7 & 8.38 1/2 24 1/2
9 & 10.64 1/2 55	9 to 12.32 20 1/2
11 & 12.63 1/2 54	

On butt weld and lap weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher, on all butt weld 3 in. and smaller.

Boiler Tubes

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes. Minimum Wall. (Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Seamless Cold Drawn	Hot Rolled	Lap Weld Hot Rolled
1 in. o.d. 13 B.W.G.	\$ 9.01	\$ 7.82	....
1 1/4 in. o.d. 13 B.W.G.	10.67	9.26	....
1 1/2 in. o.d. 13 B.W.G.	11.79	10.23	9.72
1 3/4 in. o.d. 13 B.W.G.	13.42	11.64	11.06
2 in. o.d. 13 B.W.G.	15.03	13.04	12.38
2 1/4 in. o.d. 13 B.W.G.	16.76	14.54	13.79
2 1/2 in. o.d. 12 B.W.G.	18.45	16.01	15.16
2 3/4 in. o.d. 12 B.W.G.	20.21	17.54	16.58
3 in. o.d. 12 B.W.G.	21.42	18.59	17.54
3 1/4 in. o.d. 12 B.W.G.	22.48	19.50	18.35
3 1/2 in. o.d. 11 B.W.G.	28.37	24.62	23.15
4 in. o.d. 10 B.W.G.	35.20	30.54	28.66
4 1/2 in. o.d. 10 B.W.G.	43.04	37.35	35.22
5 in. o.d. 9 B.W.G.	54.01	46.87	44.25
6 in. o.d. 7 B.W.G.	82.93	71.96	68.14

Extras for less carload quantities:

40,000 lb. or ft. or over	Base
30,000 lb. or ft. to 39,999 lb. or ft.	5%
20,000 lb. or ft. to 29,999 lb. or ft.	10%

10,000 lb. or ft. to 19,999 lb. or ft.	20%
5,000 lb. or ft. to 9,999 lb. or ft.	30%
2,000 lb. or ft. to 4,999 lb. or ft.	45%
Under 2,000 lb. or ft.	65%

CAST IRON WATER PIPE

Per Net Ton

*6-in. and larger, del'd Chicago, \$51.00	
6-in. and larger, del'd New York 49.00	
*6-in. and larger, Birmingham. 43.00	
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles.... 52.00	
F.o.b. dock, Seattle 52.00	
4-in. f.o.b. dock, San Francisco or Los Angeles 55.00	
F.o.b. dock, Seattle 52.00	

Class "A" and gas pipe, \$3 extra 4-in. pipe is \$3 a ton above 6-in.

Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$42, Birmingham, and \$50 delivered Chicago and 4-in. pipe, \$45, Birmingham, and \$54 delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine and carriage bolts:	
1/2 in. & 6 in. and smaller, 65, 5 and 5*	
Larger and longer up to	
1 in. 60, 10 and 5*	
1 1/2 in. and larger..... 60, 5 and 5*	
Lag bolts 60, 10 and 5	
Flow bolts, Nos. 1, 2, 3	
and 7 65, 5 and 5	
Hot pressed nuts, and c.p.c. and t nuts, square or hex. blank or tapped:	
1/2 in. and smaller..... 65 and 5	
9/16 in. to 1 in. inclusive. 60, 5 and 5	
1 1/4 in. and larger..... 60 and 5	

* Less carload lots and less than full container quantity. Less carload lots in full container quantity, an additional 10 per cent discount; carload lots and full container quantity, still another 5 per cent discount.

Semi-fin. hexagon nuts U.S.S. S.A.E.	
1/14 to 7/16 in. incl. 65-10 70-5	
1/2 to 9/16 in. 65-5 70	
5/8 to 1-in. incl. 60-10 65	
1 1/4 in. and larger..... 60-5 60-5	

Beyond the above, an additional 10 per cent allowed for full container quantities.

Stove bolts in packages, nuts attached	75
Stove bolts in packages, with nuts separate	75 and 12 1/2
Stove bolts in bulk.....	85

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(1/2-in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh, Cleveland	
Chicago, Birmingham	\$3.40

Small Rivets

(7/16-in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh, Cleveland,	
Chicago, Birmingham	65 and 10

Cap and Set Screws

(Freight allowed to destination)

Per Cent Off List

Milled hexagon head cap screws,	
1 in. dia. and smaller.....	50 and 10
Milled square head set screws,	
case hardened, 1 in. dia. and smaller	75 and 10
Milled headless set screws, cut thread 3/4 in. and smaller. 70 and 10	
Upset hex. head cap screws U.S.S. or S.A.E. thread 1 in. and smaller	67 1/2 and 10
Upset set screws, cup and oval points	75 and 10
Milled studs	60 1/2 and 10

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem. Base price, \$56.00 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton. Open-hearth grade, base..... 2.80c. Delivered, Detroit 2.90c. S.A.E.

Series	Alloy
Numbers	Differential
200 (1/2 % Nickel).....	\$0.35

2100 (1 1/2 % Nickel).....	0.75
2300 (3 1/2 % Nickel)	1.55
2500 (5 % nickel)	\$2.25
3100 Nickel-chromium	0.73
3200 Nickel-chromium	1.85
3300 Nickel-chromium	3.80
3400 Nickel-chromium	3.20
4100 Chromium-molybdenum (0.15 to 0.25 Molybdenum) 0.55	
4100 Chromium-molybdenum (0.25 to 0.40 Molybdenum) 0.75	
4600 Nickel - molybdenum (0.20 to 0.30 Mo. 1.50 to 2.00 Ni) 1.10	
5100 Chrome steel (0.60-0.90 Cr.) 0.35	
5100 Chrome steel (0.80-1.10 Cr.) 0.45	
5100 Chromium spring steel.... 0.15	
6100 Chromium-vanadium bar... 1.20	
6100 Chromium-vanadium spring steel	0.85
Chromium-nickel-vanadium ... 1.50	
Carbon-vanadium	0.85

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. Slabs with a section area of 16 in. and 2 1/4 in. thick or over take the billet base.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 3.40c. base per lb. Delivered Detroit, 3.50c., carlots.

CORROSION & HEAT RESISTANT ALLOYS

(Base prices, cents per lb. f.o.b. Pittsburgh)

Chrome-Nickel

	No. 304	No. 302
Forging billets ...	21.25c.	20.40c.
Bars	25c.	24c.
Plates	29c.	27c.
Structural shapes..	25c.	24c.
Sheets	36c.	34c.
Hot-rolled strip ..	23.50c.	21.50c.
Cold-rolled strip ..	30c.	28c.
Drawn wire	25c.	24c.

Straight Chrome

	No. 410	No. 430	No. 442	No. 446
Bars ..	18.50c.	19c.	22.50c.	27.50c.
Plates	21.50c.	22c.	25.50c.	30.50c.
Sheets	26.50c.	29c.	32.50c.	36.50c.
Hot strip	17c.	17.50c.	23c.	28c.
Cold stp.	22c.	22.50c.	28.50c.	36.50c.

TOOL STEEL

High speed	67c.
High-carbon-chrome	43c.
Oil-hardening	24c.
Special	22c.
Extra	18c.
Regular	14c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 3c. a lb. higher.

British and Continental

BRITISH

Per Gross Ton

f.o.b. United Kingdom Ports

Ferromanganese, ex- port	£14 Nominal
Tin plate, per base box	20s. 3d. to 21s. 6d.
Steel bars, open hearth. £11	
Beams, open-hearth	£10 12s. 6d.
Channels, open-hearth	£10 17s. 6d.
Angles, open-hearth	£10 12s. 6d.
Black sheets, No. 24 gage. £13	
Galvanized sheets, No. 24 gage	£16 15s.

CONTINENTAL

Per Gross Ton, Gold £, f.o.b. Continental Ports

Billets, Thomas	Nominal
Wire rods, No. 5 B.W.G.	£5 10s.
Steel bars, merchant	£5 5s.
Sheet bars	Nominal
Plate 1/4 in. and up.....	£5 7s.
Plate 3/16 in. and 5 mm.	£5 13s.
Sheets 1/4 in.	£5 9s. 6d.
Beams, Thomas	£4 18s.
Angles (Basic)	£4 18s.
Hoops and strip, base	£5 15s.

RAW MATERIALS PRICES

PIG IRON

No. 2 Foundry

F.o.b. Everett, Mass.	\$21.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md.	21.00
Delivered Brooklyn	23.50
Delivered Newark or Jersey City	22.53
Delivered Philadelphia	21.84
F.o.b. Neville Island, Erie, Pa., Toledo, Chicago and Youngstown*	20.00
F.o.b. Buffalo	20.00
F.o.b. Detroit	20.00
Southern, delivered Cincinnati	20.06
Northern, delivered, Cincinnati	20.44
F.o.b. Duluth	20.50
F.o.b. Provo, Utah	22.00
Delivered, San Francisco, Los Angeles or Seattle	26.95
F.o.b. Birmingham*	16.38

* Delivered prices on southern iron for shipment to northern points are 38c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of 0.70 per cent and over.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same, except at Birmingham and Provo, which are not malleable iron basing points.

Basic

F.o.b. Everett, Mass.	\$21.25
F.o.b. Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md.	20.50
F.o.b. Buffalo	19.00
F.o.b. Neville Island, Erie, Pa., Toledo, Chicago and Youngstown	19.50
Delivered Philadelphia	21.34
Delivered Canton, Ohio	20.89
Delivered Mansfield, Ohio	21.44
F.o.b. Birmingham	15.00

Bessemer

F.o.b. Buffalo	\$21.00
F.o.b. Everett, Mass.	22.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa.	22.00
Delivered Newark or Jersey City	23.53
Erie, Pa., and Duluth	21.00
F.o.b. Neville Island, Toledo, Chicago and Youngstown	20.50
F.o.b. Birmingham	21.00
Delivered Cincinnati	21.11
Delivered Canton, Ohio	21.89
Delivered Mansfield, Ohio	22.44

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.	\$25.50
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Gray Forge

Valley or Pittsburgh furnace ..	\$19.50
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Charcoal

Lake Superior furnace	\$25.00
Delivered Chicago	28.34

Canadian Pig Iron

Per Gross Ton

Delivered Toronto

No. 1 fdy., sil. 2.25 to 2.75	\$26.50
No. 2 fdy., sil. 1.75 to 2.25	25.50
Malleable	26.00
Basic	25.50

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75	\$27.50
No. 2 fdy., sil. 1.75 to 2.25	27.00
Malleable	27.50
Basic	27.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.	Per Gross Ton
Domestic, 80% (carload)	\$92.50

Spiegeleisen

Per Gross Ton Furnace

Domestic 19 to 21%	\$28.00
Domestic, 26 to 28%	33.00

Electric Ferrosilicon

Per Gross Ton Delivered; Lump Size

50% (carload lots, bulk)	\$69.50*
50% (ton lots in 50 gal. bbl.) ..	80.50*
75% (carload lots, bulk)	126.00*
75% (ton lots in 50 gal. bbl.) ..	139.00*

Bessemer Ferrosilicon

F.o.b. Furnace, Jackson, Ohio

Per Gross Ton

10.00 to 10.50%	\$29.50
For each additional 0.50% silicon up to 12%, 50c. per ton is added. Above 12% add 75c. per ton.	
For each unit of manganese over 2%, \$1 per ton additional. Phosphorus 0.75% or over, \$1 per ton additional.	
Base prices at Buffalo are \$1.25 a ton higher than at Jackson.	

Silvery Iron

Per Gross Ton

F.o.b. Jackson, Ohio, 5.00 to 5.50%	\$23.50
For each additional 0.5% silicon up to 12%, 50c. a ton is added. Above 12% add 75c. a ton.	
The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.	
Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.	

Ferrochrome

Per lb. Contained Cr., Delivered Carlots, Lump Size, on Contract

4 to 6% carbon	10.50c.*
2% carbon	16.50c.*
1% carbon	17.50c.*
0.10% carbon	19.50c.*
0.06% carbon	20.00c.*

Silico-manganese

Per Gross Ton, Delivered, Lump Size, Bulk, on Contract

3% carbon	\$92.75
2.50% carbon	97.75
2% carbon	102.75
1% carbon	112.75

Other Ferroalloys

Ferrotungsten, per lb. contained W del., carloads, nominally	\$2.00
Ferrotungsten, lots of 500 lbs. nominally	2.05
Ferrotungsten, smaller lots, nominally	2.10
Ferrovanadium, contract, per lb. contained V., delivered	\$2.70 to \$2.90†
Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y., tons lots.	\$2.25†
Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton	\$142.50
Ferrocobaltititanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton	\$157.50
Ferrophosphorus, electric or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton	\$58.50
Ferrophosphorus, electrolytic, 23-26% in car lots, f.o.b. Monsanto (Siglo), Tenn., 24%, per gross ton, \$3 unitage, freight equalized with Nashville	\$75.00
Ferromolybdenum, per lb. Mo. f.o.b. furnace	95c.
Calcium molybdate, per lb. Mo. f.o.b. furnace	80c.

*Spot prices are \$5 per ton higher
†Spot prices are 10c. per lb. of contained element higher.

ORES

Lake Superior Ores

Delivered Lower Lake Ports

Old range, Bessemer, 51.50%	Per Gross Ton
Old range, non-Bessemer, 51.50% ..	\$5.25
Mesabi, Bessemer, 51.50%	5.10
Mesabi, non-Bessemer, 51.50% ..	4.95
High phosphorus, 51.50%	4.85

Foreign Ore

C.I.F. Philadelphia or Baltimore

Per Unit

Iron, low phos., copper free, 55 to 58% dry, Algeria, nominal ..	17.00c.
Iron, low phos., Swedish, average, 68 1/2% iron, nominally 17 to 18c.	
Iron, basic or foundry, Swedish, aver. 65% iron, nominally 15c.	
Iron, basic or foundry, Russian, aver. 65% iron	Nominal
Man., Caucasian, washed 52%	35c.
Man., African, Indian 44-48%	33c.
Man., African, Indian, 49-51%	35c.
Man., Brazilian, 46 to 48 1/2%	33c.

Per Short Ton Unit

Tungsten, Chinese, Wolframite, duty paid, delivered	\$20.00
Tungsten, domestic, scheelite delivered	\$20.00 to 21.00
Chrome ore (lump) c.i.f. Atlantic Seaboard, per gross ton: South African (low grade)	15.00
Rhodesian, 45%	19.50
Rhodesian, 48%	23.00
Turkish, 48-49%	23.50 to 24.50
Turkish, 45-46%	22.50
Turkish, 44%	18.00
Chrome concentrates (Turkish) c.i.f. Atlantic Seaboard, per gross ton: 50%	24.50 to 25.50
48-49%	24.50 to 25.00

FLUORSPAR

Per Net Ton

Domestic washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail	\$18.00
Domestic, f.o.b. Ohio River landing barges	18.00
No. 2 lump, 85-5, f.o.b. Kentucky and Ill. mines	\$18.00 to 19.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid	24.50
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silicon, f.o.b. Illinois and Kentucky mines	31.50

FUEL OIL

Per Gal.

No. 2 or diesel, f.o.b. Bayonne ..	4.00c.
No. 6, f.o.b. Bayonne	2.26c.
Del'd Chicago, No. 5 Bur. Stds.	3.25c.
Del'd Chicago, No. 6 Bur. Stds.	2.75c.
Del'd Cleve'd, No. 3 distillate	5.50c.
Del'd Cleve'd, No. 4 industrial	5.00c.
Del'd Cleve'd, No. 5 industrial	3.25c.
Del'd Cleve'd, No. 6 industrial	3.00c.

COKE

Per Net Ton

Furnace, f.o.b. Connells-ville, Prompt	\$3.75
Foundry, f.o.b. Connells-ville, Prompt	\$4.75 to 5.50
Foundry, by-product, Chicago ovens	10.25
Foundry, by-product, del'd New England	12.50
Foundry, by-product, del'd Newark or Jersey City	10.88 to 11.40
Foundry, by-product, Philadelphia	10.95
Foundry, by-product, delivered Cleveland ..	10.30
Foundry, by-product, delivered Cincinnati ..	9.75
Foundry, Birmingham ..	7.50
Foundry, by-product, del'd St. Louis industrial district	10.75 to 11.00
Foundry, from Birmingham, f.o.b. cars dock, Pacific ports	14.75

FABRICATED STEEL

... Awards decline to 17,300 tons from 26,510 tons last week ... New projects lower at 12,240 tons as against 23,100 tons a week ago ... Plate awards call for 470 tons.

NORTH ATLANTIC STATES

AWARDS

- 550 Tons, Bergen, N. Y., State bridge RC-3983, to Bethlehem Steel Co., Bethlehem, Pa.
- 450 Tons, New York, World's Fair building for Polish Government, to American Bridge Co., Pittsburgh.
- 445 Tons, Manchester, N. Y., armory, to Lyon Iron Works, Greene, N. Y.; S. A. Sullivan & Son, general contractor.
- 315 Tons, Sharon, Pa., warehouse for Westinghouse Electric & Mfg. Co., to Minnotte Brothers, Pittsburgh.
- 280 Tons, New York, repairs to main towers, Williamsburg Bridge, to American Bridge Co., Pittsburgh.
- 270 Tons, New York, Netherlands building at World's Fair, to Ingalls Iron Works Co., Birmingham; George A. Fuller Co., general contractor.
- 250 Tons, Barker, N. Y., school, to Ernst Iron Works, Buffalo.
- 250 Tons, Annapolis, Md., repairs to Navy mess hall, to Bethlehem Steel Co., Bethlehem, Pa.
- 200 Tons, Hartford, Conn., Travelers' Insurance Co. building, to Standard Structural Steel Co., Hartford, Conn.
- 175 Tons, New York, curb angles, Procurement Division, to Phoenix Bridge Co., Phoenixville, Pa.
- 170 Tons, Rehoboth, Del., swing bridge, to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 165 Tons, Brighton, Mass., skating rink, to New England Structural Co., Everett, Mass.
- 150 Tons, Buffalo, alterations to American Terminal warehouse, to R. S. McMannus Steel Construction Co., Buffalo.
- 125 Tons, Oaks, Pa., addition for B. F. Goodrich Co., to American Fabricated Steel Co., Philadelphia.

THE SOUTH

- 585 Tons, Jacksonville, Fla., U. S. Gypsum Co. building, to Virginia Bridge Co., Roanoke, Va.; George A. Fuller Co., general contractor.
- 235 Tons, Letcher County, Ky., bridge, to St. Louis Structural Steel Co., St. Louis.
- 195 Tons, Hillsboro County, Fla., bridge, to Tampa Shipbuilding Co., Tampa, Fla.
- 120 Tons, Carroll County, Ga., bridge, to Taylor Iron Works & Supply Co., Macon, Ga.

CENTRAL STATES

- 1450 Tons, Independence Village, Ohio, State bridge, to Bethlehem Steel Co.

- 280 Tons, Rantoul, Ill., two warehouses, to Mississippi Valley Structural Steel Co., St. Louis.

- 210 Tons, Belleville, Ill., two warehouses at Scott Field, to Superior Structural Steel Co., St. Louis.

- 190 Tons, Chicago, drainage canal bridge, Western Avenue and 35th Street, to Bethlehem Steel Co., through Midwest Construction Co.

- 140 Tons, Milwaukee, South 70th Street bridge, to Worden-Allen Co., Milwaukee.

- 105 Tons, Mount Pleasant, Mich., bridge, to American Bridge Co., Pittsburgh, through Walter Toebe, contractor.

WESTERN STATES

- 5875 Tons, State of California, Central Valley District, bridge over Sacramento River for Southern Pacific Railroad, to American Bridge Co., Pittsburgh.

- 2000 Tons, Los Angeles, May Co. department store building, to Consolidated Steel Corp., Los Angeles.

- 760 Tons, Bremerton, Wash., Navy yard buildings, to Bethlehem Steel Co., Seattle.

- 505 Tons, Los Angeles, two bridges for Santa Fe Railroad, to American Bridge Co., Pittsburgh.

- 302 Tons, Maplewood, Wash., undercrossing, to Bethlehem Steel Co., Seattle; M. P. Butler, Seattle, general contractor.

- 246 Tons, Los Angeles, parcel post building, to Pacific Iron & Steel Co., Ltd.; Sarver & Zoss, general contractor.

- 150 Tons, Denver, Lowry Field warehouse, to Midwest Steel & Iron Co., Denver, Colo.

- 150 Tons, Strasburg, Colo., State bridge FAP-351-E, to Kansas City Structural Steel Co., Kansas City.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

- 7000 Tons, Queens, N. Y., elevated highway and approaches, 45th to 64th Streets, Elmhurst Contracting Co., Inc., Queens, N. Y., low bidder.

- 700 Tons, Woodbridge, N. J., Pennsylvania Railroad grade elimination.

- 500 Tons, New York, Linden Street bridge, contract WB-10.

- 306 Tons, Tioga County, N. Y., also 73 tons reinforcing bars, project F.A.G.H., R.C. 3986, Lane Construction Corp., Meriden, Conn., low bidder.

- 300 Tons, New York, World's Fair building for National Dairy Products Corp.

- 300 Tons, Chappaqua, N. Y., addition to Horace Greeley School.

- 300 Tons, Brookhaven, N. Y., County bridge.

- 235 Tons, Pittsburgh, Concord School.

- 200 Tons, Wyomissing, Pa., school; bids in.

- 125 Tons, New York, World's Fair building for American Radiator Co.

- 113 Tons, Oswego, N. Y., highway project F.A.S., S.S. 38-23, Howes & Farrell, Inc., Carthage, N. Y., low bidder.

- 100 Tons, Jackson Hollow, N. Y., including 20 tons reinforcing bars, highway project F.A.S., S.S. 38-21, J. F. Morgan Co., Whitney Point, N. Y., low bidder.

THE SOUTH

- 125 Tons, Lexington, Ky., garage for C. T. Crowe.

CENTRAL STATES

- 6000 Tons, Lorain, Ohio, two bridges over Black River; bids expected in November.

- 1800 Tons, Youngstown, Ohio, two bridges for city; bids expected in November.

- Unstated tonnage, Milwaukee, new Cherry Street bascule span, to cost \$750,000; City Council approved project under PWA loan and grant.

- Unstated tonnage, Milwaukee, new Wisconsin Avenue bascule span, to cost about \$900,000; City Council plans it as PWA project.

- Unstated tonnage, Milwaukee, two-level bridge, Humboldt Avenue, costing \$260,000; PWA grant applied for.

- 260 Tons, Little Fork, Minn., State bridge No. 5804.

- 130 Tons, Paxico, Kan., beam spans.

- 125 Tons, Newberry, Mich., power house.

- 125 Tons, Rochester, Minn., reconstruction, bridge R-94.

WESTERN STATES

- 10,959 Tons, Tacoma, Wash., Narrows Bridge; bids Sept. 27.

- 800 Tons, Bremerton, Wash., new smith shop and addition to pipe shop for U. S. Navy

FABRICATED PLATES

AWARDS

- 190 Tons, Fairpoint, Ohio, dump scow doors for four scows, to Fort Pitt Bridge Works Co., Pittsburgh.

- 165 Tons, Louisville, Ky., guard gates for U. S. Engineer, Lock 41, Ohio River, to Bedford Foundry & Machine Co., Bedford, Ind.

- 115 Tons, Freedom, Pa., two tanks for Freedom Oil Co., to Hammond Iron Works, Warren, Pa.

NEW PROJECTS

- 8000 Tons, Los Angeles, completion of Palos Verdes feeder of Colorado River Aqueduct; bids Oct. 4 with concrete alternate.

- 1000 Tons, Sandusky, Ohio, 42-in. steel pipe for intake; National Construction Co., Cleveland, low bidder.

SHEET PILING

NEW PROJECTS

- 1071 Tons, Tacoma, Wash., Narrows Bridge; bids Sept. 27.

THIS WEEK'S MACHINE ...TOOL ACTIVITIES...

*... Selling conditions spotty throughout the country ...
Small tool sales showed substantial increase in August.*

Light Equipment Sales Volume Being Sustained

NEW YORK—Sales of light equipment in the past week were well up to the level of the preceding week, despite the shortness of the period due to the holiday. Heavy equipment, however, did not fare so well, as there was very little activity in this phase of the machine tool market. General manufacturing sources were responsible for practically all the week's activities, although some buying for the Picatinny arsenal helped swell the week's sales total of some sellers. The trade is still waiting for specifications on the machines to be purchased by the Navy Department, but these data are slow in coming out. In all probability, it will take at least six months to cover the department's entire list. Buying by New England plants is spotty, but export orders are holding up fairly well.

Sales Somewhat Heavier in Northern Ohio

CLEVELAND—Machine tool requirements of this immediate district are slightly heavier, although the post-Labor Day upturn is slower to develop than many persons expected. One large company is receiving proposals for its branch plant in this city, a number of single machine projects are active, while the Ashland, Ohio, school board will make a purchase soon. Fisher Body division of General Motors and the New York Central shops are resuming production, with other industries. At Youngstown, United Engineering & Foundry Co. has booked orders estimated at \$1,000,000. The United States Ordnance Department has ordered \$32,271 in lathes from Warner & Swasey. Manufacturers of machine tools continue very busy against foreign orders.

Foreign Orders Ease Off, Cincinnati Builders Report

CINCINNATI—An easing in lathe ordering from abroad the past week reduced machinery market averages under the preceding week, but not as low as previous fluctuations. A moderate improvement in drill ordering tended to take up a bit of the slack caused by the lesser lathe business. The downward movement is not viewed with alarm, manufacturers generally feeling this to be merely a temporary fluctuation following the holiday period. The steadiness of domestic ordering continues to be a feature of the current market and gives optimistic background to the present demand. Inquiry is still active and manufacturers sense a more sincere attitude in current requests.

Production rate is unchanged.

Small Tool Orders Gain But Machinery Orders Drag

CHICAGO—Neither business prospects nor sentiment is much improved. Machinery buyers, except in rare instances, are so apprehensive of the future state of their own businesses, or else are so perturbed over political conditions, that they fail to see the need for installing new equipment. Small tool orders in August were 20 per cent higher than in July, according to one seller, while a manufacturer reported a 30 per cent rise in his small tool sales. Traditionally, machine tool activity always follows small tool interest, but just now inquiries do not indicate a much broader demand for the heavier machinery. Some expressions are being given to the thought that idle capital can be no better disposed of at this time of low interest rates and unfavorable investing conditions, than in commodities and capital goods, such as new machinery.

Baldwin's August Orders Reported at \$3,621,775

DOLLAR value of orders taken in August by the Baldwin Locomotive Works and subsidiary companies, including the Midvale Co., is announced as \$3,621,775, compared with \$4,234,568 for August, 1937. The month's bookings brought the total for the consolidated group for the first eight months of 1938 to \$18,663,790 as compared with \$26,217,029 in the same period last year.

Government Steel Orders For Week Total \$315,954

WASHINGTON.—Government orders for iron and steel products, as reported by the Walsh-Healey Public Contracts Board for the week ended Sept. 8, totaled \$315,954.42 as compared with \$363,786.99 the previous week and \$145,688.48 two weeks ago.

Largest order went to the Combustion Engineering Co., Inc., of New York and Chattanooga, Tenn., and covered \$74,935 for boilers for the War Department Engineers. Noland Co., Inc., of Washington, D. C., was

listed as receiving a \$52,927.14 contract for supplying steel pipe to the Navy Department's Bureau of Supplies and Accounts, and the Combustion Engineering Co., Inc., New York, was awarded a \$47,077 contract with the Commerce Department for steel boilers.

During the same period, Government contracts for electrical apparatus and supplies totaled \$39,036; for transportation equipment, \$36,131.26; and for "other machinery," \$240,074.50.

Products Exhibit at Baltimore Oct. 25-27

APPROXIMATELY 100 booths have been reserved for the third annual Manufacturers' Products Exhibit to be held Oct. 25-26-27 at the Lord Baltimore Hotel, Baltimore. The exhibit, of which J. H. Gaston, 405 Municipal Building, Baltimore, is vice-chairman, is sponsored by the Purchasing Agents' Association of Baltimore. C. C. Copenhaver, Eastern Rolling Mill Co., is a member of the exhibit's traffic committee, while Frank H. Carter, Maryland Drydock Co., is general chairman.

Foreign Buying Helps Steel Mills in Poland

WASHINGTON.—Heavier foreign purchases favorably affected the Polish iron and steel industry during June, 1938, and accelerated the production levels of the blast furnaces, steel furnaces, and rolling mills, according to a report to the Department of Commerce from the office of the American commercial attaché at Warsaw. Foreign purchases were 32 per cent above those listed for the previous month, chiefly because of heavier orders from Turkey, Bulgaria, The Netherlands, Italy, China, Argentina, Costa Rica, Bolivia, and Yugoslavia. The domestic turnover, however, showed a small decline on account of reduced Government orders, the report stated.

\$94,976 Tin Order for Navy Goes to C. S. Trench

WASHINGTON.—The Navy Department's Bureau of Supplies and Accounts has awarded a \$94,976 contract to C. S. Trench & Co., Inc., New York, for 224,000 lb. of tin.

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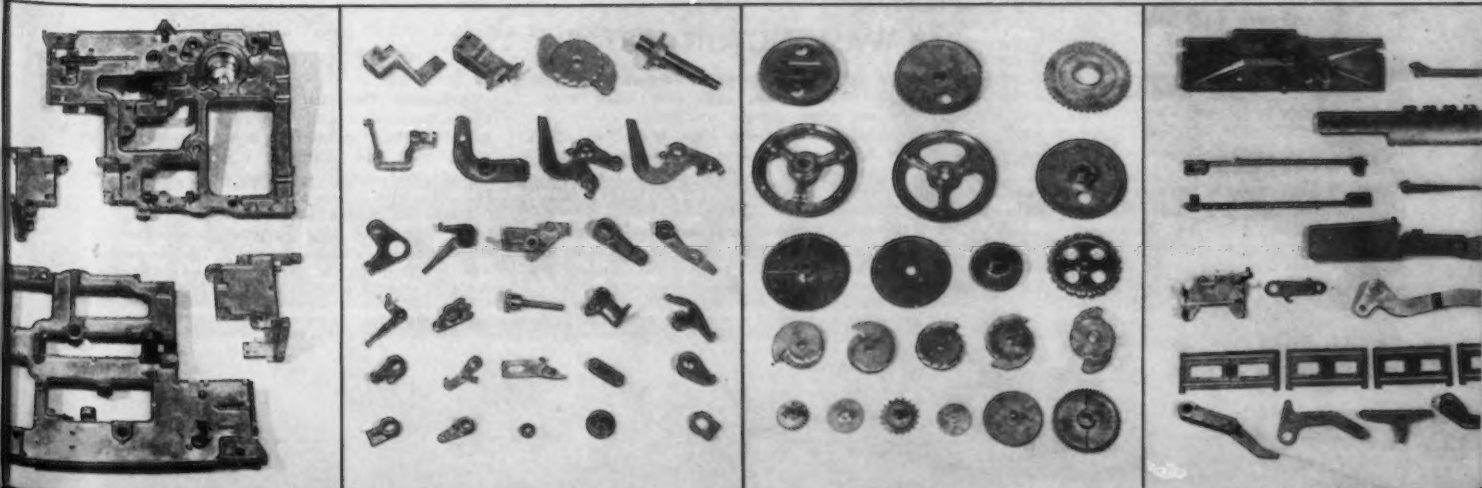


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PLANT EXPANSION AND EQUIPMENT BUYING

◀ NORTH ATLANTIC ▶

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, New York, will begin work soon on initial buildings for new plant at Mobile, Ala., and has just concluded arrangements for lease of right-of-way property of State-owned terminal railway near site, to be used in conjunction with plant. It will comprise several units for production of sulphate of alumina and other industrial chemicals. Cost over \$500,000 with equipment.

Commanding Officer, Ordnance Department, Watervliet Arsenal, Watervliet, asks bids until Sept. 30 for monorail conveyor system, for metal bar and pipe stock room (Circular 30).

Brewster Aeronautical Corp., 27-01 Bridge Plaza North, Long Island City, has purchased through its subsidiary, Braeco Realty Corp., former local plant of Pierce Arrow Motor Car Co., consisting of main four-story building with two one-story extensions. Structures provide a floor area of 170,000 sq. ft. Main building will be improved for aircraft parts manufacture and assembling. Present works will be removed to new location and increased capacity carried out. Brewster company recently formed a subsidiary under name of Brewster Aircraft Parts, which also will operate at new plant. P. M. Stephenson is production manager.

Celanese Corp. of America, Inc., 180 Madison Avenue, New York, manufacturer of cellulose rayon products, has arranged for sale of a bond issue of \$10,000,000, part of proceeds to be used for expansion and improvements in mill at Amcelle, Md., as well as in connection with proposed new mill near Pearisburg, Va., where 1200-acre tract on New River was acquired several months ago. Latter project will represent an initial investment of over \$4,000,000 with buildings and machinery.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 20 for one heavy-duty, motor-driven corner lock forming machine (Schedule 4334) for Brooklyn Navy Yard; air-cooling systems for magazine spaces, with spare parts, special tools and wrenches (Schedule 4311) for Brooklyn and Philadelphia yards.

Department of Markets, 139 Centre Street, New York, Carl W. Kimball, deputy commissioner, will begin work soon on new freight terminal at Bronx terminal market, 151st and Exterior Streets, for which a fund of about \$250,000 has been arranged through Federal aid. Unloading, mechanical-handling, conveying and other allied equipment will be installed.

Signal Corps Procurement District, Army Base, Fifty-eighth Street and First Avenue, Brooklyn, asks bids until Sept. 23 for 820,000 lin. ft. of wire, 33,000 ft. of cable and 11 reels (Circular 32); until Sept. 30 for 9500 pliers (Circular 38).

Quartermaster, Fort Totten, Staten Island, New York, asks bids until Sept. 20 for 14,000 lin. ft. of metallic armored cable, 86 street-lighting standards and one station-type constant current regulator (Circular 913-8).

Commanding Officer, Ordnance Department, Picatinny Arsenal, near Dover, N. J., asks bids until Sept. 19 for unit heaters for building No. 256 (Circular 196); until Sept. 20, 2000-lb. demolition bombs (Circular 93), 1100-lb. demolition bombs (Circular 94), 600-lb. demolition bombs (Circular 95), 100-lb. demolition bombs (Circular 96); until Sept. 21, 3000 forged lifting, eye-bolt plugs for 155-mm. shells (Circular 189).

Philadelphia Smoked Meats, Inc., Philadelphia, care of Morris Fruchtbaum, 4829 Roosevelt Boulevard, engineer, organized a few months ago, has asked bids on general contract for two and three-story meat-processing and packing plant, 125 x 135 ft., at 10-18

North Delaware Avenue, to be occupied under long-term lease. Cost about \$209,000 with equipment.

Yeadon School District, Yeadon, Pa., L. R. Schneider, secretary, plans manual training department in new two-story junior high school, for which bids are being asked on general contract. Cost about \$250,000. Financing has been arranged through Federal aid. W. Pope Barney and Roy W. Banwell, Architects' Building, Philadelphia, are architects.

◀ BUFFALO DISTRICT ▶

Agfa-Ansco Corp., Charles Street, Binghamton, N. Y., manufacturer of cameras and parts, and other photographic equipment, has asked bids on general contract for one-story addition for expansion in casting division. Cost close to \$150,000 with equipment. Lockwood Greene Engineers, Inc., 30 Rockefeller Plaza, New York, is architect and engineer.

Spencer Lens Co., 19 Doat Street, Buffalo, manufacturer of optical goods, will take bids at once on general contract for new one-story plant, 325 x 400 ft., at Cheektowaga. Cost about \$200,000 with equipment instead of smaller amount previously noted in these columns. H. E. Plumer & Associates, 775 Main Street, Buffalo, are architects and engineers.

◀ NEW ENGLAND ▶

Commanding Officer, Ordnance Department, Watertown Arsenal, Watertown, Mass., asks bids until Sept. 26 for one multi-turning tool lathe (Circular 98); until Oct. 3, two power hack saws (Circulars 99 and 100), one thread miller (Circular 101), one cap shear (Circular 102).

Board of School Trustees, Northampton, Mass., plans manual training department in new three-story and basement high school building. Cost about \$800,000. Financing has been arranged through Federal aid. J. Williams Beal Sons, 185 Devonshire Street, Boston, and Frank M. Mahoney, 45 Beacon Street, Northampton, are associated architects.

Inspirator Corp., New Haven, Conn., manufacturer of carburetors and parts, is arranging for stock issue of about \$500,000, part of proceeds to be used for plant development and additional machinery.

Commanding Officer, Ordnance Department, Springfield (Mass.) Armory, asks bids until Sept. 19 for gages, double end, adjustable snap, location, alignment, flush pin, etc. (Circular 61); until Sept. 26, equipment for machining handle operating rod (Circular 23); until Sept. 29, five motor-driven universal grinders (Circular 52); until Sept. 30, one portable two-stage, air-cooled, gasoline engine-driven air compressor, with engine unit not less than four cylinders mounted on four anti-friction bearing wheels (Circular 48), two gas-fired steam boilers, and one 310-gal. hot-water storage tank (Circular 59).

◀ WASHINGTON DIST. ▶

Board of District Commissioners, District Building, Washington, asks bids until Sept. 19 for one crawler-type tractor.

Chemical & Pigment Co., Inc., 6401 St. Helena Avenue, Baltimore, has plans for new steam power house at local plant. Cost over \$40,000 with boiler units and auxiliary equipment.

Washington Suburban Sanitary District, Hyattsville, Md., plans new incinerator to serve communities in metropolitan area of Prince George County, Md. Cost about \$55,

000 with furnace units, mechanical-handling and other equipment. Financing has been arranged through Federal aid.

Bureau of Yards and Docks, Navy Department, Washington, asks bids (no closing date stated) for crane runway at Norfolk, Va., Navy Yard (Specifications 8817); also bids until Sept. 28 for new trade school and other buildings at Norfolk (Specifications 8837) (Appropriation of \$500,000 is available for last noted project); one-story shed at Naval Academy, Annapolis (Specifications 8885).

City Council, Lexington, Va., plans new municipal electric power plant and distributing system. Cost about \$365,000, of which \$164,000 has been secured through Federal grant.

Calvert Distillers Corp., Relay, Md., has approved plans for five-story addition to distillery, 60 x 65 ft., to be used as a cooker and still house. Cost over \$80,000 with equipment. Executive offices are at 405 Lexington Avenue, New York.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 20 for one horizontal motor-driven milling machine (Schedule 4337) for Sewall's Point Navy Yard; 45,100 lin. ft. of corrosion-resisting steel cable (Schedule 4359) for Sewall's Point, Pensacola and San Diego yards; until Sept. 23, two water-wash spray booths, with special wash-down feature (Schedule 4358) for Sewall's Point yard; heat and flame-resistant electric cable (Schedule 4347) for Norfolk, Va.; steel flasks (Schedule 4331), turbine-driven centrifugal pumps (Schedule 4264) for Eastern and Western yards.

◀ SOUTH ATLANTIC ▶

Royal Crown Bottling Co., Jacksonville, Fla., has approved plans for new two-story mechanical bottling plant at 1235 San Marco Boulevard, including storage and distributing facilities. Cost close to \$50,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 23 for exhaust collector assembly rings for aircraft service for naval air station, Pensacola, Fla. (Schedule 900-1984).

Miami Water Co., Miami, Fla., plans installation of 1,000,000-gal. water tank, pumping machinery and accessories, and high-pressure operating equipment for maintaining water pressure in Little River and Miami Shores Village area.

◀ WESTERN PA. DIST. ▶

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 23 for three vibrating machines for Pittsburgh (Schedule 4362).

Eagle Collieries, Inc., Charleston, W. Va., plans new coal tippie, with conveyor system, loaders and other mechanical-handling equipment on Kanawha River, Eagle, W. Va., at head of Wheelers Island. Cost over \$60,000 with equipment.

Farm Security Administration, Washington, is arranging loan of \$325,000 to group of cooperatives at Federal Homestead project, Arthurdale, W. Va., to take over a local industrial building, owned by Government, for production of farm tractors, including parts production and assembling. Tractor units heretofore have been purchased by cooperatives from Duplex Machine Co., Battle Creek, Mich., which is reported to be furnishing certain equipment for plant.

◀ SOUTH CENTRAL ▶

Arkansas Fuel Oil Co., Bossier City, La., plans extensions and improvements in Loreco oil refinery, including new polymerization plant unit and equipment; also additions to storage and distributing facilities. Cost about \$950,000 with equipment.

Board of Education, Administration Building, Fifth and Hill Streets, Louisville, has asked bids on general contract for three-story addition to Ahrens Trade School, 546 East First Street. Cost about \$365,000 with equip-



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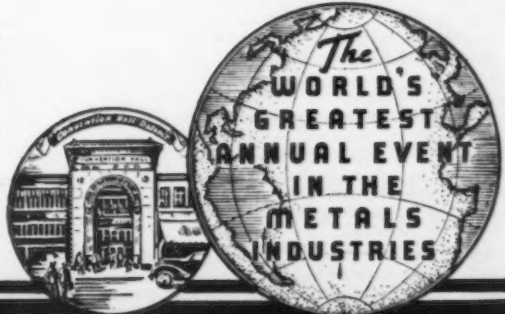
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ment. Financing has been arranged through Federal aid. Alfred Weinedel, Washington Building, is architect; Warren & Ronald, Heyburn Building, are mechanical engineers.

Director of Purchases, Tennessee Valley Authority, Knoxville, Tenn., asks bids until Sept. 20 for electrical cable and accessories for new 110-kv. power transmission line from Jackson to Bradford, Tenn., about 550,000 lin. ft. of conductor.

Southern Advance Bag & Paper Co., Hodge, La., manufacturer of kraft paper stocks, plans addition to mill, with installation of paper-making machinery and auxiliary equipment. Cost about \$300,000.

Schott & Co., Inc., 524 Howard Avenue, New Orleans, meat-packer, plans new one and two-story meat-packing plant, 60 x 220 ft. Cost over \$70,000 with equipment. Favrot & Reed, Nola Building, are architects.

◀ MICHIGAN DISTRICT ▶

Buick Motor Division, General Motors Corp., Flint, Mich., has approved plans for two-story addition, 310 x 750 ft., replacing present factories Nos. 18 and 34, which will be razed. New unit will total about 350,000 sq. ft. of floor space, and will be equipped for a parts and service division, with storage and distributing departments. Cost over \$500,000 with equipment.

Michigan Sugar Co., Saginaw, Mich., will make extensions and improvements in beet sugar mills at Saginaw, Sebawaing, Crosswell, Lansing, Caro and Alma. At first noted plant extensions will be made in steam power house and additional equipment installed, cost about \$110,000; at Crosswell, refining division will be remodeled and slicing capacity increased; a new centrifugal station will be installed at Sebawaing plant. Entire project will cost over \$400,000 with equipment. G. S. Childs is executive vice-president.

City Council, Wyandotte, Mich., plans extensions and improvements in municipal electric power plant, including additional equipment. Cost about \$385,000. Financing has been arranged through Federal aid. Smith, Hinchman & Grylls, Inc., Marquette Building, Detroit, is consulting engineer.

Central Paper Co., Inc., Muskegon, Mich., kraft, tissue and other paper stocks, is considering an addition for expansion in pulp division. Cost over \$75,000 with equipment.

◀ SOUTHWEST ▶

Arkansas Copper Co., Little Rock, Ark., recently organized, care of Dr. J. D. Jordan, Boyle Building, president and representative, plans new concentrating mill at properties near Norman, Ouachita National Forest district, Ark., including equipment for handling about 15 tons of ore per day. A power house with diesel engine units and accessories will be built. Cost over \$85,000 with equipment. W. C. Stenger, Little Rock, is acting vice-president and general manager.

City Council, Erick, Okla., plans new municipal electric power plant and distributing system. Cost about \$105,000. Financing is being arranged through Federal aid. V. V. Long & Co., Colcord Building, Oklahoma City, Okla., are consulting engineers.

Board of Education, Sixth and Osage Street, Bartlesville, Okla., plans a one-story industrial arts building in connection with new senior high school, for which bids will be asked soon on general contract. Cost about \$512,000. Financing is being arranged through Federal aid. John D. Forsyth, 115 East Eighteenth Street, Tulsa, Okla., and Arthur Gorman, 301 Johnstone Street, Bartlesville, are associated architects.

City Council, Winfield, Kan., plans extensions and improvements in municipal electric power plant, including new 2000-kw. turbo-generator unit and accessories, condenser, crane and other equipment. Cost about \$175,000, of which \$79,695 will be a Federal grant. Black & Veatch, 4706 Broadway, Kansas City, Mo., are consulting engineers.

Corpus Christi Corp., Corpus Christi, Tex., plans new natural gas recycling plant in Stratton gas field area, western part of Neuces County, Tex., where company recently has acquired properties of John F. Camp. Plant will include compressor station, power house and other structures. Cost about \$500,000 with machinery.

Commanding Officer, Ordnance Department, San Antonio, Tex., asks bids until Sept. 21 for one 20-hp. vertical boiler unit and accessories (Circular 6).

L. J. Smith Steel Co., 615 Velasco Street, Houston, Tex., iron and steel products, plans new one-story plant, 90 x 140 ft., on Lyons Avenue, with office building adjoining. Cost close to \$50,000 with equipment.

◀ MIDDLE WEST ▶

United States Engineer Office, Rock Island, Ill., asks bids until Sept. 19 for one full diesel marine-type engine, six cylinders (Circular 67).

National Paper Co., Hubbard Avenue and Green Street, Chicago, manufacturer of paper specialties, has asked bids on general contract for one-story addition to converting plant. Cost close to \$45,000 with equipment.

City Council, Dayton, Iowa, will take bids soon for municipal electric power station and extensions in distributing system. Cost about \$60,000. Financing has been arranged through Federal aid. Ralph W. Gearhart, 341 Twenty-first Avenue S.E., Cedar Rapids, Iowa, is consulting engineer.

Bureau of Reclamation, Denver, asks bids until Sept. 19 for one ditch-cleaning and excavating machine, crawler-traction and endless chain, bucket-digging unit type, for Belle Fourche, S. D., project (Specifications 1119-D); until Sept. 26, metal shelving, bins and benches for warehouses Nos. 2 and 3, Boulder Canyon project (Specifications 1122-D).

City Council, Stuart, Iowa, asks bids until Sept. 30 for extensions and improvements in municipal electric power plant, including two 300-hp. diesel engine-generator units and auxiliary equipment, with alternate bid on one 120-hp. similar diesel unit. H. S. Nixon, Grain Exchange Building, Omaha, Neb., is consulting engineer.

Purchasing and Contracting Officer, office of Quartermaster, Fort Francis E. Warren, Wyo., asks bids until Sept. 28 for anchors, valves, washers, conduit, couplings, screws, rubber-covered wire, galvanized pipe and other equipment (Circular 749-12).

Purchasing and Contracting Officer, Sparta, Wis., CCC District, asks bids until Sept. 20 for 58 ball-bearing shapers, 58 belt sanders, and 58 woodworkers' vises (Circular 7601-14), 120 1/2-hp. electric motors and accessories (Circular 7601-15).

Belle City Mfg. Co., Racine, Wis., manufacturer of agricultural tools and implements, has sold its plant at Sixteenth Street and DeKoven Avenue, to Modine Mfg. Co., maker of industrial heating systems, radiators, etc., and has acquired factory of former Ajax Tire Co. on Taylor Avenue, in which it plans to develop some new lines of farm tools. Belle City property consists of 13 acres and has 11 buildings, the largest four stories and 600 ft. long. Property is adjacent to present Modine plant. Improvements and installation of considerable new equipment in both plants is contemplated. A. B. Modine is president of the Modine firm and George Nelson is general manager of Belle City company.

◀ PACIFIC COAST ▶

Lockheed Aircraft Corp., 1705 Victory Place, Burbank, Cal., has let general contract to Alco Construction Co., 107 North Larchmont Boulevard, Los Angeles, for one-story addition, 140 x 320 ft., structural steel to be furnished by Consolidated Steel Corp., Ltd., Los Angeles. New unit will total about 42,000 sq. ft. of floor space. John and Donald B. Parkinson, Title Insurance Building, Los Angeles, are architects.

Turlock High School District, Turlock, Cal., plans one-story vocational shop at local

high school. Cost about \$45,000 exclusive of equipment. Financing is being arranged through Federal aid. H. L. Gogerty, 6272 Yucca Street, Hollywood, Cal., is architect.

Bureau of Yards and Docks, Navy Department, Washington, asks bids (no closing date stated) for one steam turbine, straight condensing type for Mare Island Navy Yard (Specifications 8907).

Board of Education, Glendale, Cal., has let general contract to Theodore A. Beyer Corp., Chamber of Commerce Building, Los Angeles, for one-story equipment storage and distributing building at 411 East Wilson Avenue. Cost \$51,500 exclusive of equipment. Erwood P. Eiden, 106 East Wilson Avenue, is architect.

Star Brewing Co., Inc., Sixth Street and Broadway, Vancouver, Wash., has let general contract to George H. Buckler Co., Lewis Building, Portland, Ore., for rebuilding part of plant recently destroyed by fire. Cost about \$75,000 with equipment.

J. D. Ross, administrator, Bonneville Project, Failing Building, Portland, Ore., asks bids until Sept. 30 for 1,586,000 lin. ft. of electrical cable for transmission lines, with 330 connectors, 520 dead-ends, and three sets of tools (Circular 51), 784,000 lin. ft. of electrical cable for similar service, with 165 connectors, 260 dead-ends and two sets of tools (Circular 52).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 27 for shaft revolution indicator and spare parts (Schedule 4321), one motor-driven screw machine (Schedule 4339) for San Diego Naval Air Station.

◀ OHIO AND INDIANA ▶

Bersted Mfg. Co., Fostoria, Ohio, manufacturer of domestic electrical appliances, has leased a floor in building at 539 King Street, West, Toronto, Ont., for Canadian branch plant. Company has organized a subsidiary under name of Bersted Mfg. Co., Ltd., to operate plant. J. A. MacLennan is vice-president and general manager.

City Council, Middletown, Ohio, is considering new municipal electric light and power plant. Cost about \$2,400,000. Financing will be arranged in part through Federal aid. Froehlich & Emery Engineering Co., Second National Bank Building, Toledo, Ohio, is consulting engineer.

Columbus Pipe & Equipment Co., 157 East Main Street, Columbus, Ohio, has acquired one-story building on Markinson Street, near Parsons Street, and will remodel for new plant, including facilities for storage and distribution.

Contracting Officer, Materiel Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until Sept. 19 for hydraulic hand pump valve seat and piston head disks, hand pump gaskets and relief valve adjusting screw lock-nuts, hydraulic hand pump pistons and screws, and hydraulic hand pump relief valve piston adjusting springs (Circular 112).

City Council, Troy, Ohio, plans extensions and improvements in municipal electric light and power plant and distributing system, including additional equipment. Cost about \$180,000. Financing is being arranged through Federal aid.

Board of School Commissioners, Administration Building, 150 North Meridian Street, Indianapolis, will ask bids soon on general contract for new three-story addition to Arsenal Technical High School, East Michigan Street. Cost about \$750,000 with equipment. Financing has been arranged in part through Federal aid. Pierre & Wright, Architects and Builders Building, are architects.

Board of School Trustees, Kokomo, Ind., plans new steam power plant for central heating at junior high, central high and other schools. Cost about \$335,000 with boiler units, stokers, pumps and auxiliary equipment. Financing is being arranged through Federal aid. McGuire & Shook, Fletcher Trust Building, Indianapolis, are architects.